

FIG. 1

TCACGTTAAAGGGATCTA GATTATGAT GATTACTG CGCAACTTC CTCCTGGGT TCCGTGCC GGGCGTAA TGTCTGCTCA GCGCATGGCC
 AGTGCATT TCCCTAGAT CTAACTA
 MetMe tilethrIle ArglyLeu ArglyLeu ArglyLeu ArglyLeu AlaValala AlaValala AlaGlyValM etSerIlaG1 nalaMetIla
 ~Start of lamb signal sequence

GGTCCCGAAA CTCTCTGCGG TGCTGAAGT GTGACGCTC TGCAGTTCGAT ATGTTGAT CGAGGCTTC TGTTCAACAA ACCCACTGGG GCTGGATCCT
 CCAGGGCTT GAGAGCCGCC ACAGCTGAC CAACTGGAG ACAGTCAGCA TACACCACTA GCTCCGAAGG ACAGTGTGTT TGGCTCACCC CGACCTAGGA
 GLYProGlyut hRLauCysGly YLagluLeu ValAspAlaL eugInPheVa IcysGlyAsp ArgGlyPhE L eugHeAsnLy sProThrGly ALaGlySerSer
 ^Start of IGF-I (Y24L, Y31A)

CCTCTGTCG TGCCTCCAG ACTGGTATG TTGACGATG CTGCTTCT TCTGGGACC TGCCTGCT GGAATGAT TCCCTCCCC TGAACCCGC
 GGAGGAGC AGCAGGGTC TGACCATAC AACTGCTAC GACGAGGCA AGAACCTGG AGCGAGGA CCTTACATA AGCGAGGG ACTTGGCC
 SerArgArg GlnAlaProGln ThrglyIleV alAspGluCys sCysPheArg SerCysAspL euArgArgle uGluMetTyr CysAlaProl euLysProAla
 LysSerAla Am*

Figure 1: Nucleotide and Amino Acid Sequence of the LamB Signal Sequence and IGP-I (Y24L, Y31A)

FIG. 2

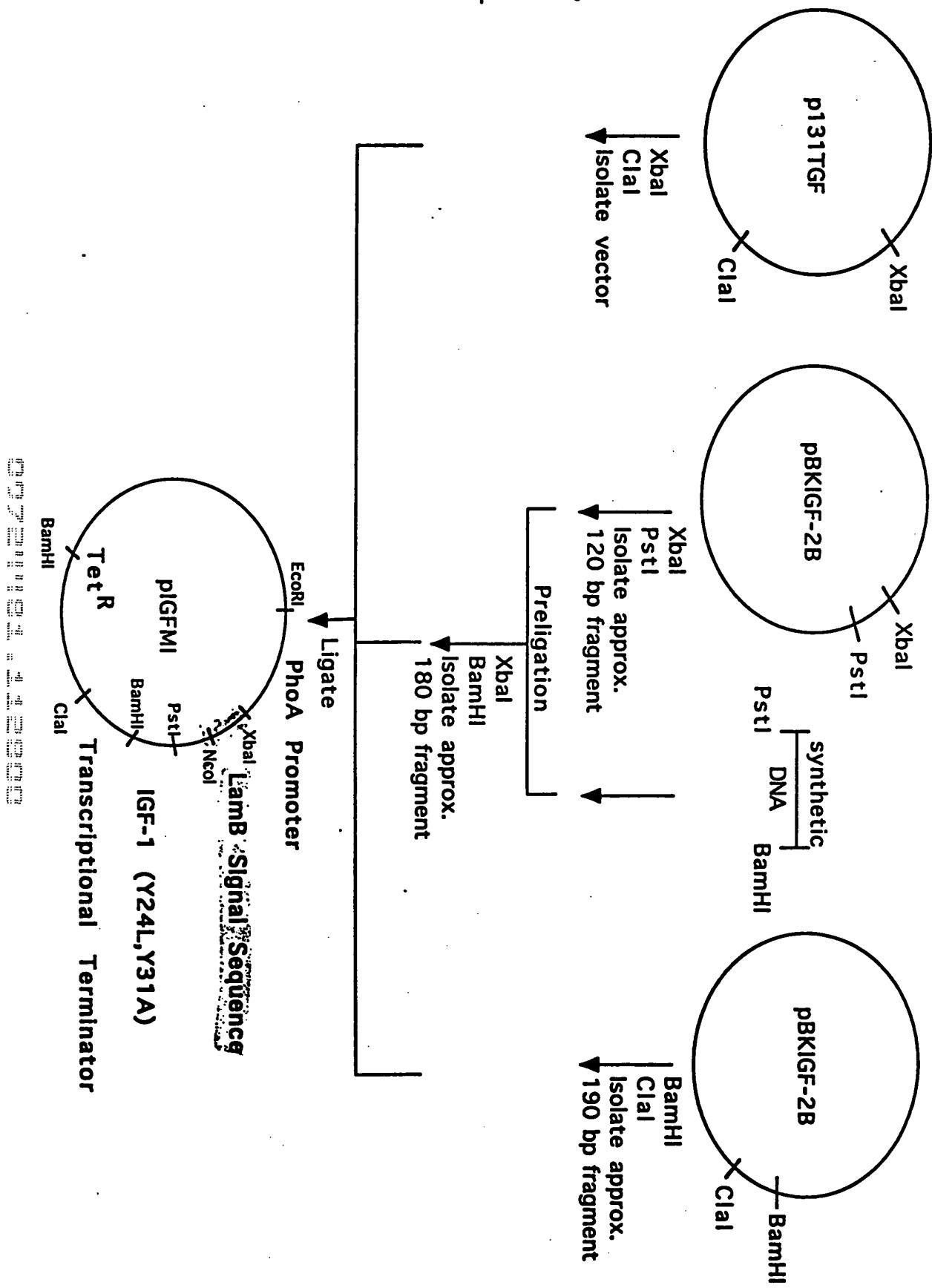


FIGURE 3

plasmid IGFMI
length: 5115 (circular)

FIGURE 3 (cont'd)

1301 TGGGGGCCAT CTCCCTGCAT GCACCATTC CTTGGCCGGC GGTGCTCAAC GGCTCAACC TACTACTGG CTGCTTCATA ATGCGAGACT CGCATAGGG
 ACCCGGGGTA GAGGAACGTA CGGGTAAGG AACGGCCCG CGGAGTTG CCGAGTTG ATGATGACCC GACGAGGAT TAGTCCCTCA GCGATTCCC
 1401 AGAGCGTGA CGGATGCCCT TGAAGGCCTT CAACCCAGTC AGCTCTTCC GGTGGCCGG GGCATGACT ATCGRGCCG CACTATGAC TGTCTCTT
 TCTGGCAGCT GGCTACGGGA ACTCTGGGA GTGGGTCAG TGGGGAGG CCACCCGGC CCGTACTCA TAGCAGCGG CTGATACG ACAGAGGAA
 1501 ATCTGGCAC TCGTAGGACA GGTCGGGCA GGCCTCTGG TCATTTCGG CGAGGACCC TTTGCTGA GGGGAGGAT GATGGGCTG TCGCTGGG
 TAGTACGTG AGCATCTGT CCACGGGGT CGCGAGACCC AGTAAGGC GCTCTGGG AMGGGACCT CGGGCTGCTA CTAGCCGGC AGGGAGGCC
 1601 TATTCGGGAT CTTGCAAGCC CTGGCTCAAG CTTGGTCAAC TGGTCCCGCC ACCAACGTT TCGCGAGAA GCAGGCCATT ATGCCGGGA TGGGGCCGA
 ATAGGCTTA GAGCGTCCG GAGCGAGTC GGAAGCAGTG ACCAGGGGG TGGTTTCAA AGCGCTTCTT CGTCGGTAA TAGGGCCCT ACCCGGGCT
 1701 CGCCCTGGCC TACGTCCTC TGGCGTTCG GACGGAGGC TGGATGGCCT TCCCATTAT GATCTTCCTC GCTTCGGG GCATGGGAT GCGCCGGTG
 GCGGACCCG ATGAGAAGC ACCCGAAGG CTGCGCTCG ACCTACCGA AGGGTATA CTAGAAGAG CGAGGGCC CGTAGCCCTA CGGGGGAC
 1801 CAGGCGATGC TGTCCAGGA GGAGATGAGC GACCATGCA AGGATCCTC GCGCTCTTA CGACCTTAC TCGATCTC GCGAGGAACT GGTGGATTC
 GTCCGGTACG ACAGGTCGT CCTACTCG CTGGTACTC CTGTCGAGT TCTAGGAG AGCTGATCT GAGCTAGTA CCGGGCTGCG
 1901 TCGTCACGGC GATTATGCC GCTCTGGCA GCACATGAA CGGTTGGCA TGGATTGAG GCGCCGGCCCT ATACCTGTC TGCTCCCG CGTTCGGCG
 ACCAGTGCCG CTAAATACGG CGGAGCCGGT CGTGTACCT ACCTAATC CGGGGGGA TATGGAGAC AGCGAGGGC GCAAGCCGC
 2001 CGGCGCATGG AGCGGGGCA CCTCGACCTG ATGGAGCCC GGGCGCACCT CGCTAACGGA TCAACACTC CAAGATGG AGCGAACGCT
 GCGTACGTACCG TCGGCCCCGT GGAGCTGGC TTACCTGG CGGATGGCT AGTGGTGG AGCTCTAAC TCGGTTAGT AGCTAGTA CCGGGCCCT
 2101 GAGCTGTGA TCGCAAAACC AACCTTGGC AGAACATTC CATCGGTCC CCCATCTCA GCAGGGCAC GGGGCATC TCGGCGAGG TGGTCTCG
 CTTGACACTT AGCGGTTGG TTGGACACG TCTGTAGAG GTACCGCAGG CGTAGAGT CGTGGCGGTG CGGGCCCTAG
 2201 GCGCGGGGTG CGCATGATCG TGCTCTGTG CTTGGAGGCC CGGCTAGGCT GCGGGGGTG CCTACTGGT TAGCAGATG ATTCACCGAT AGCGAGGGA
 CGGCGCCAC GGCTACTAGC AGGGAGACG CAACTCCCG GCGGATCCGA CGGCCAAC GGATGACCA ATGCTCTAC TTAGGGTA TGCGCTGGCT
 2301 ACGTGAAGGG ACTGCTGTG CAAACGCTG CTTGGAGGCC CGGACTCTAG CAACACATG ATGTCCTC GGTTCGGT TTTCGTAAG TCGGAAACG CGGAGCTAG
 TGCACTTCGC TCAAGACGAC GTTTCGAG CGCTGGATC GTTGTGTAC TTACAGAG CGCAAGGCAC AGACCTTC AGACCTTCGCG
 2401 CGCCCTGGCAC CTTATGTC CCGATCTGCA TCCGAGGATG CTGCTGGCA CACCTACATC TGTATTAACG AAGGCTGCC ATGACCTG
 GCGGGACGCTG GAAATACAG GCCTAGACGT AGCGTCTAC GACGACCGAT GGGACACCTT GTGGATGTAG ACATATTCG TCGGACCG TRACTGGAC
 2501 ATGTAATTTT CTCTGGTCC GCGGATCTCA TACGGCCAGT TGTATTAACCT CACACGTC CAGTACCGG CGATGTCAT CTCAGTAC CGTATGTC
 TCACTAATAA GGGACAGG CGGGCTAGT ATGGGGCA ACACATGGG GTCTGGAG GTCTGGCC CTCACAGTA GTACTCATG GGCAATGCA
 2601 AGCATCTCT CTCTGGTCTC CGGATCTATT ACCCCATCA ACAGAATTC CCCCTACAC GGAGCCTCA AGTGACCAA CAGGAAAGA CGGCCCTAA
 TCGTAGAGA GAGCAAGTA GCGATAGTA TGGGGTACT TGTCTTAAG GGGGAATGTC CCTCCGTAGT TCACTGGTT GTCCTTTT GGGGGATT
 2701 CATGGCCGC TTATCAGAA GCCAGACATT AACGCTCTG GAGAACATCA AGGAGCTGGA CGGGATGAA GAGGAGACA TCTGTGATC GGTCAAGAC
 GTACCGGGCG AATAGTCTT CGGTGTAA TTGGAAAGAC CTCTTGTAGT TGCTGACCT GCGCTACTT GTCGGTCTG AGACACTTAG CGAAGTGG
 2801 CACGGCTGATG AGCTTTACCG CAGCTCCCTC GGGCGTTTG GTGATGACCG TGAACACTC TGACATGC AGCTCCGGA GACGGCACA GCTGTGCTG
 GTCGGACTAC TCGAAATGGC GTCGAGGGG CGGGCAAAAG CACTACTGCC ACTTTGGAG ACTGTGTACCG TCGAGGGCT CTGGCAAGT CGACAGACA
 2901 AAGGGATTC CGGGAGCAGA CAAGCCGCTC AGGGGGCTC AGGGGGCTT GGGGGCTC GGGGGCAG CATGACCCAG TCACTGGAG ATAGGGAGT
 TTGGCCCTACG GCGCTGCT TCGCCACAA CCCCCACAG CCCGGCTCG GTACTGGTC AGTGATCGC TATCGCCCTA

FIGURE 3 (cont'd)

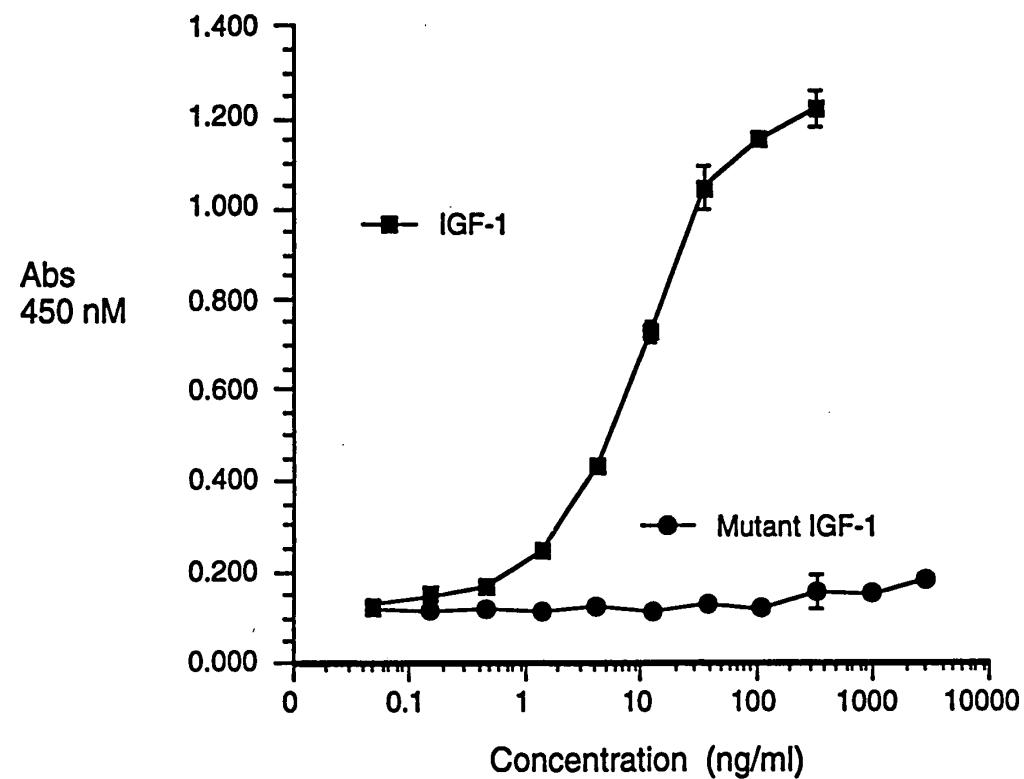
3001 GATATCTGGC TAACTATGC GGCATCAGAG CAGATGTAC TGAGAGTCAA CCATATGGG TGTGAATTC CGCACAGATG CGTAAGGAGA AATTCGGCA
 CAVATGACCC AATTGATAGC CGTAGTCAC ACTTCACGT GGTATAAGCC AACTTTAG GCGTGTCTAC GCATTCCTCT TTATGGCGT
 3101 TTAGGGCGTC TTCCGCTTC TGCCTCTCG ACTCGCTGCG CTCGGTCGT CGCTGGGGC GAGCGGTATC AGCTCACTCA AAGGGGAA TAGGGTATC
 AGTCCCGCGAG AAGGGCAGG AGGGAGTAC TGAGCTGAC GAGCCAGCA GCGCAGGGC CTCGGCGATAG TCGAGTGAGT ATGCCAATG
 3201 CACAGAATCA GGGATAACG CAGGAAGAA CATGAGCA AAAGGCCAGC AAAGGCCAGC GAAACCGTAA AAGGGGGGT TGCTGGCTT TTCCATAGG
 GGTGCTTATG CCCCATTG CTCCTTCTT GTACACTCGT TTTCGGCG TTTCGGCTC CTTGGCATT TTCCGGCA ACGACGCCA AAAGGATAC
 3301 CTCGGGGGG CTGACGAGCA TCAAAAT CGACGCTAA CTGAGGGG GCGAACCCG AGAGGATAT AAGATACA GCGTTCCC CCTGGAGCT
 GAGCTGCTCGT CGGACCTG CCGTAACTCG CGCTTACCGG ATACCTGTC GCCTTCTCC CTTGGGAG CGTGGGCTT TCTCATCTCCT CACCGTGTAG
 3401 CCTCTGTGCG CTCTCTGTG CGGACCTG CCGTAACTCG CGCTTACCGG ATACCTGTC GCCTTCTCC CTTGGGAG CGTGGGCTT TCTCATCTCCT CACCGTGTAG
 GGGAGCAGC GAGAGGAA GCGTGGAG GCGAACTGGC TATGACAGG CGGAAGGAG GAAAGCCCTC GCAAGGGAA AGAGTATGCA GTGGACATC
 3501 GATATCTCACT TCGGTGAGG TCGTCGTC CAAAGCTGGC TCGTGTGAGG AACCCCCGT TCAAGCCAGC CGCTGGCT TATCGGTTA CTATGCTT
 CATAGAGTCA AGCCACATC AGGAAGGGAG GTTCGAGCCG AGAACCGTGC TTGGGGCA AGTGGGGCTG GCGACGGGA ATAGCCATT GATAGCAGA
 3601 GAGTCCAAAC CGTAGAGCA CAACTTACG CCACGGAG CAGGACTGG TACAGGTT AGCAGGAA GGTATCTAG CGGTGCAAGA GAGTCTGA
 CTCAGGTTGG GCGCTCTG GCGTACATGC GGTGACCGT GTCGGTGC ATTGTCTAA TCTCTCTGC CCATACATCC GCGACAGCT CTGAGACT
 3701 AGTGGTGGC TAACTACGG TAACTAGAA GGACAGATT TGGATCTGC GTCTGTGGT AGCTGGATT AGCAGGAA AGATGGTA GCTCTGATC
 TCAACCAACG ATTGTGGC ATTGTGATCT CCTGTGATAA ACCATAGAG CGAGGACT TCGTCAGT TCTCTCTGC CCATACATCC GCGACAGCT CTGAGACT
 3801 CGGCAACAA ACCACGGTG GTACGGGG TTTTTGTT TCGAGCAGC AGATAGCG AGATAGCG AGCCAGTAC CGTCGAAAGA AGATGGTA GCTCTGATC
 CCCGGTTGG TGGGGCAC CATGCCAC AAAAAGCA AGCTCGTGC TCTAATGCC GCTTTTTT CCTAGAGTC TCTCTAGAA CTAGAAAGA
 3901 AGGGGCTG AGCTCTAGG GAGCAAAAC TCACGTAG GGTTTGTT CTAGAGTA TCAAAAGGA TCTTCCTTA GATCCTTTA AATTAATTA
 TGCCCCAGAC TCGAGTCAC CTCTCTTG AGTGCATTC CCAAAACCA GTACTCTAT AGTPTTCTT AGAAGGGAT CTAGGAAATT TAAATTTA
 4001 GAGGTTAA ATCAATCAA AGTATATAG AGTAATCTG GTCTGACAGT TACCAATGCT TAACTAGTA GAGTGTCA ATGGTACCA ATTAGTCACT CGTGGATAG AGTCGTAGA CAGTAAGC
 CTTCAAAATT TAGTTAGT TCATATATAC TCATTGAC CAGCTGTCA ATGGTACCA ATTAGTCACT CGTGGATAG AGTCGTAGA CAGTAAGC
 4101 TCTCAATCA GTGCGCTGC TCCCCGTGT TGTAGATAGT ACCTGACGG AGGGCTTACCT ATCTGGCCCA AGTGCCTCA TGTACCGG AGACCCAGC
 AGTGGTAACT CAAAGGAGT AGGGGAGCA CTCATATGA TGCTATGCC TCCGAAATGG TAGACGGGG TCACGAGCT ATCTGGCC TCTGGTGC
 4201 TCAACGGCTC CAGATTAC AGCATTAAC CAGCCGGG GAAAGGGCA GGGCAGAGT GGCTCTGCA CTTATCCC CTCCATCCAG TCTATTAAT
 GTCTGCGAG GTCTAAATG TCGTTATGG GTCGGTGGC CTCGGGGCT CGCGCTCA CCAGGACGTT GAATAGGG GAGGTGGTC AGATTAAT
 4301 GTGGCGGGA AGCTAGAGTA AGTAGTTGC CAGTTATAG TTTCGGCAC GTGTGTGCC TGCTGTGAGG CATCGTGTG TCACGGCTGT CGTTGGTAT
 CAAAGGGCTC TCGATCTCT TCTTCAGG GTCAAATTC AAAGGGGTG CAAACAGGT AAACGGCTC GTAGCCTAC AGCGGAGCA GCAACCCATA
 4401 GGTCTCATTC AGCTCCGGT CCCACGATC AAAGGGAGT ACAGATCCC CCATGTGTG CAAAAAGAGC GTTAGCTCTC TCGTCCTCC GATCGTGTG
 CGGAGTAC TCGGGCAAA GGGTTGCTAG TTCCGCTAA TGTACTAGG GTTACACAC GTTTTCGCA CAACTGGAGA AGCGAGGGG CTAGGAG
 4501 AGAGTAAGT TGGGGCACT GTATCTAC TGTGTATGG CAGGACTGCA TAACTCTT ACTGTCATGC CTCGGAG GAGCGGGG CTAGGAG
 TCTTCATCA ACGGGGCA CAACTGGAG TACCAATAC GTGGAGACGT ATTAGAGA TGACAGTAG GTAGGCAATC TAGGAAAGA CACTGACAC
 4601 AGTACTCAAC CAACTCATTC TGAGATAGT GTATGGGG ACCGAGTTC TCTGGGGGG CGTCACAGC GGATAATAC GCGCCACATA CGAGACTT
 TCATGAGTTG GTTCAGTAACTCTATCA CATAACGGCC TGGCTCAACG AGAACGGGCC CGAGTGTGC CCTATTATGG CGGGGTGAT CGCTTGAA

FIGURE 3 (cont'd)

4701 AAAAGTGCTC ATCATGGAA ARCGTTCTC GGGGCGAAA CTCCTCAGGA TCTTACCCCT GTGAGAGATCC AGTCGATGT AACCCACTCG TGCACCCAC
TTTCACGAG TAGTAACCTT TTGCAAAGAG CCCCGCTTT GAGAGTCCT AGATGGCGA CAACTCTAGG TCAAGCTACA TTGGGTGAGC ACGTGCGTG
4801 TGATCTTCAG CATCTTTCAC TTTCACCCG GTTCTCGGT GAGCRAAAC AGGAAGCCAA ATGCCGCAA AAAGTGGTCG CAAGACCCA CTGGTTTTG TCCTCCCTT TTAGGGCGTT
ACTAGAGTC GAGAAATG
4901 GAACTCTAT ACTCTCCCT TTCAATTT ATGAGCAT TTTCAGGGT TATTGCTCA TGACGGATA CATATTGAA TGTTTAAAGA AAATTAACA
CTTATGAGTA TGAGAAGGA AAAGTATTA TAACTTGCTA AATGTCCTA ATACAGAGT ACTGCCTAT GTATAAATCT ACTAAATCT TTATTTGT
5001 AAATAGGGTT CGGGCAGCAT TTCCCCGAA AGTGCACCT GACCTCTAAG AAACATTTAT TATCATGACA TTAACTATA AAATAGGG TATCAGGAG
TTATCCCCAA GGCGCGCTTA AGGGGCTT TCACGGTGA CTGCGATTC TTGGTATA ATAGTACTG AAATGGATA TTAAACCGC ATAGTCCTC
5101 CCCTTGCTC TTCAA
GGGAAGCGAG
AGTTT

FIG. 4

IGF-1 KIRA in Human MCF-7 Cells
Comparison of IGF-1 and Mutant IGF-1



115.5

IGF-1 ($\text{Leu}^{24} \text{Ala}^{31}$) is Inactive In Vitro

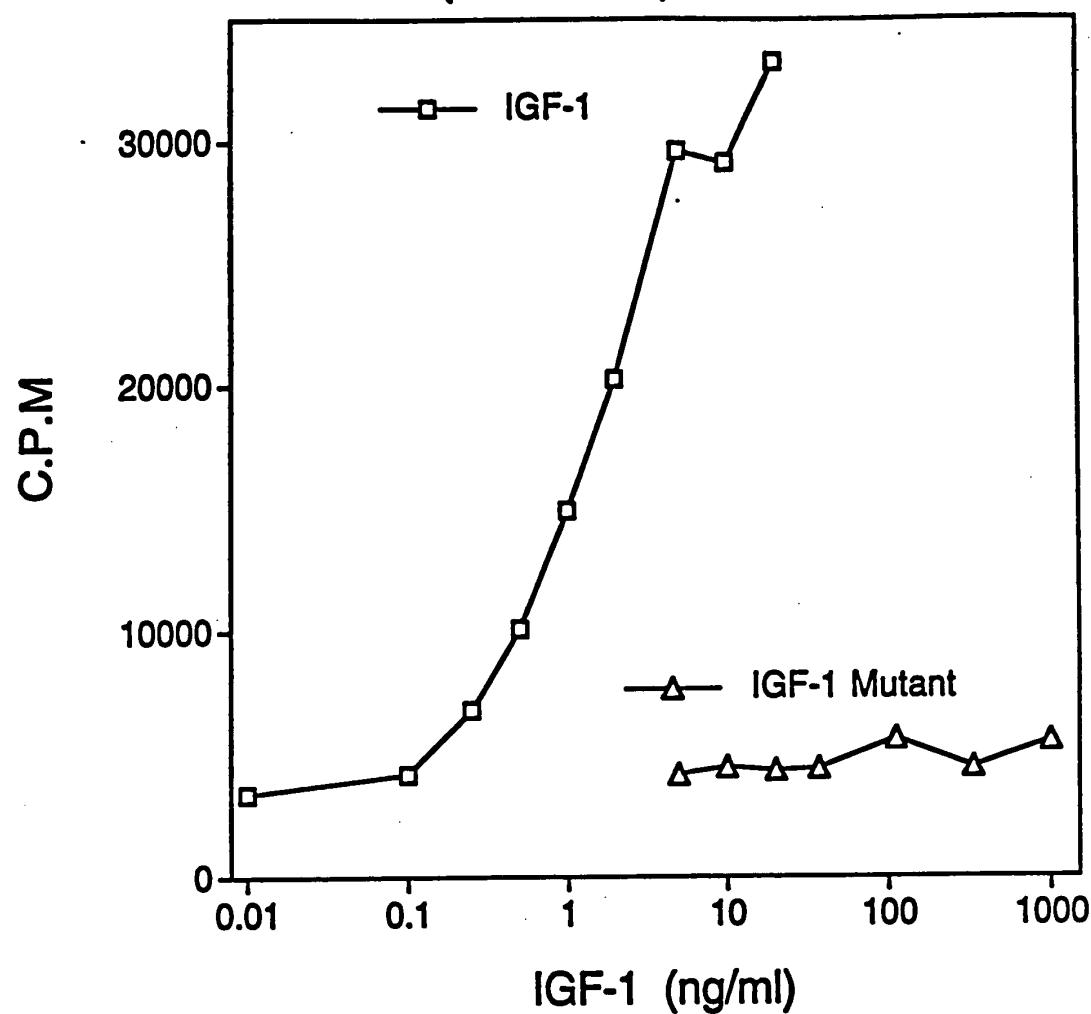


FIG. 6

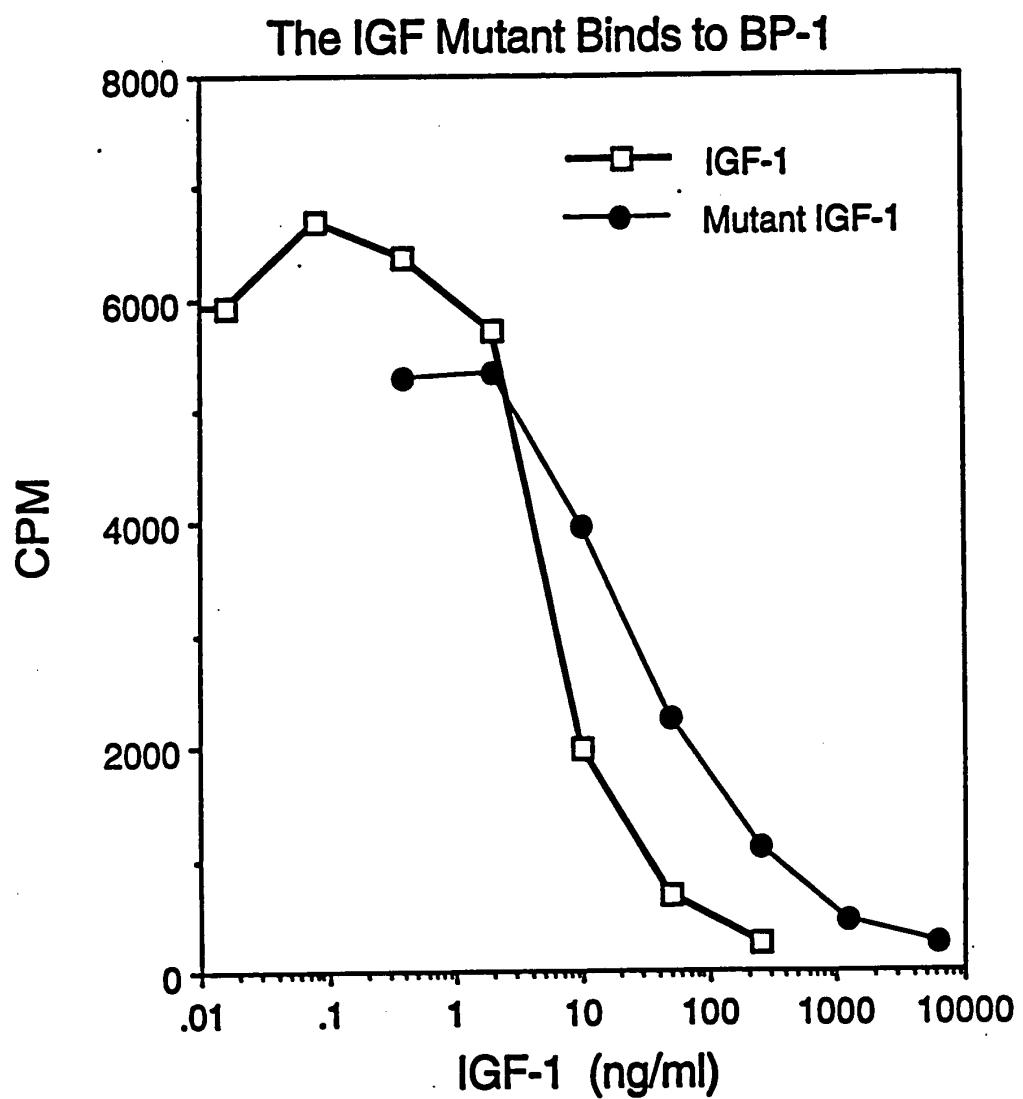


FIG. 7

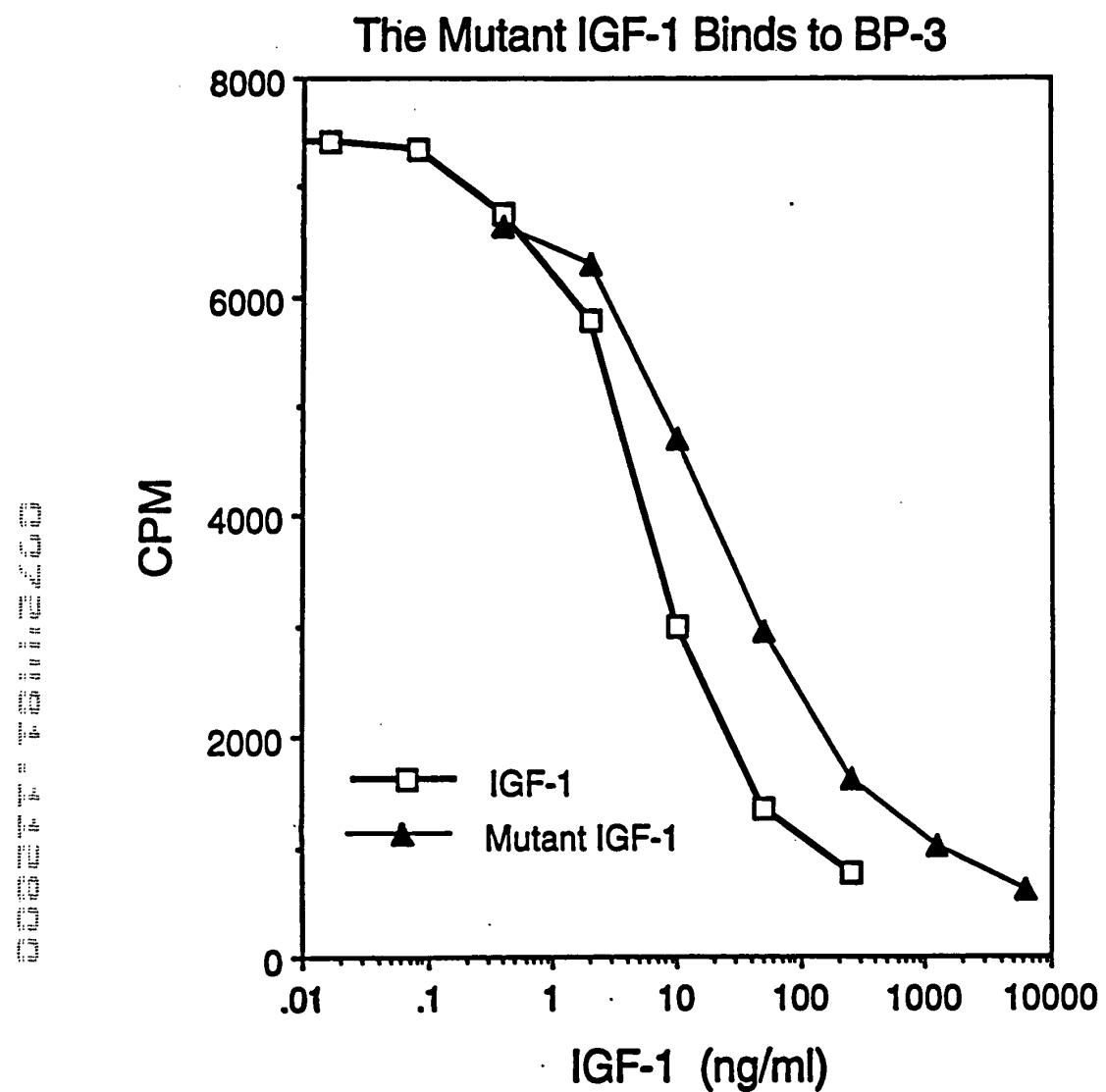


FIG. 8

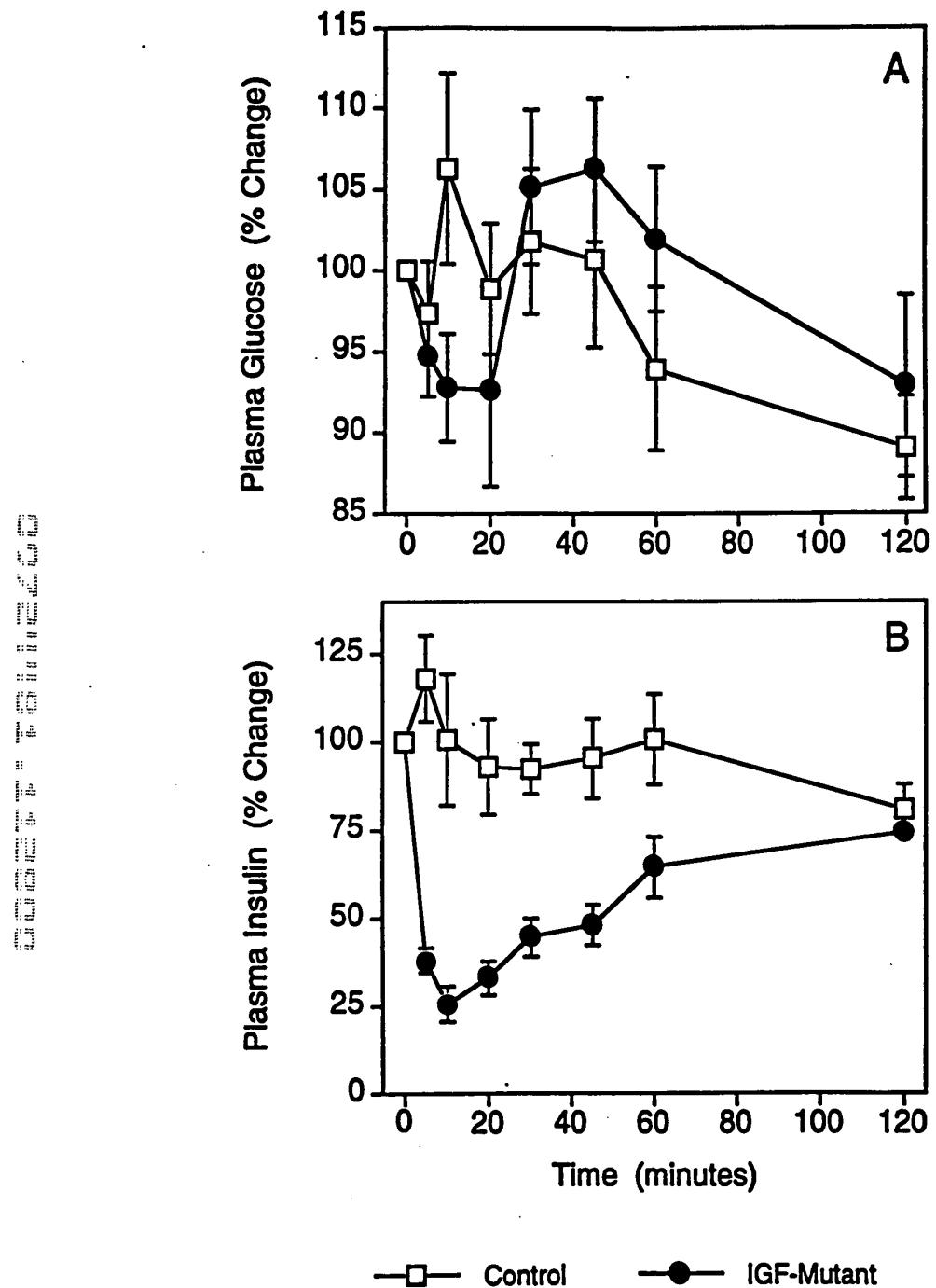


FIG. 9

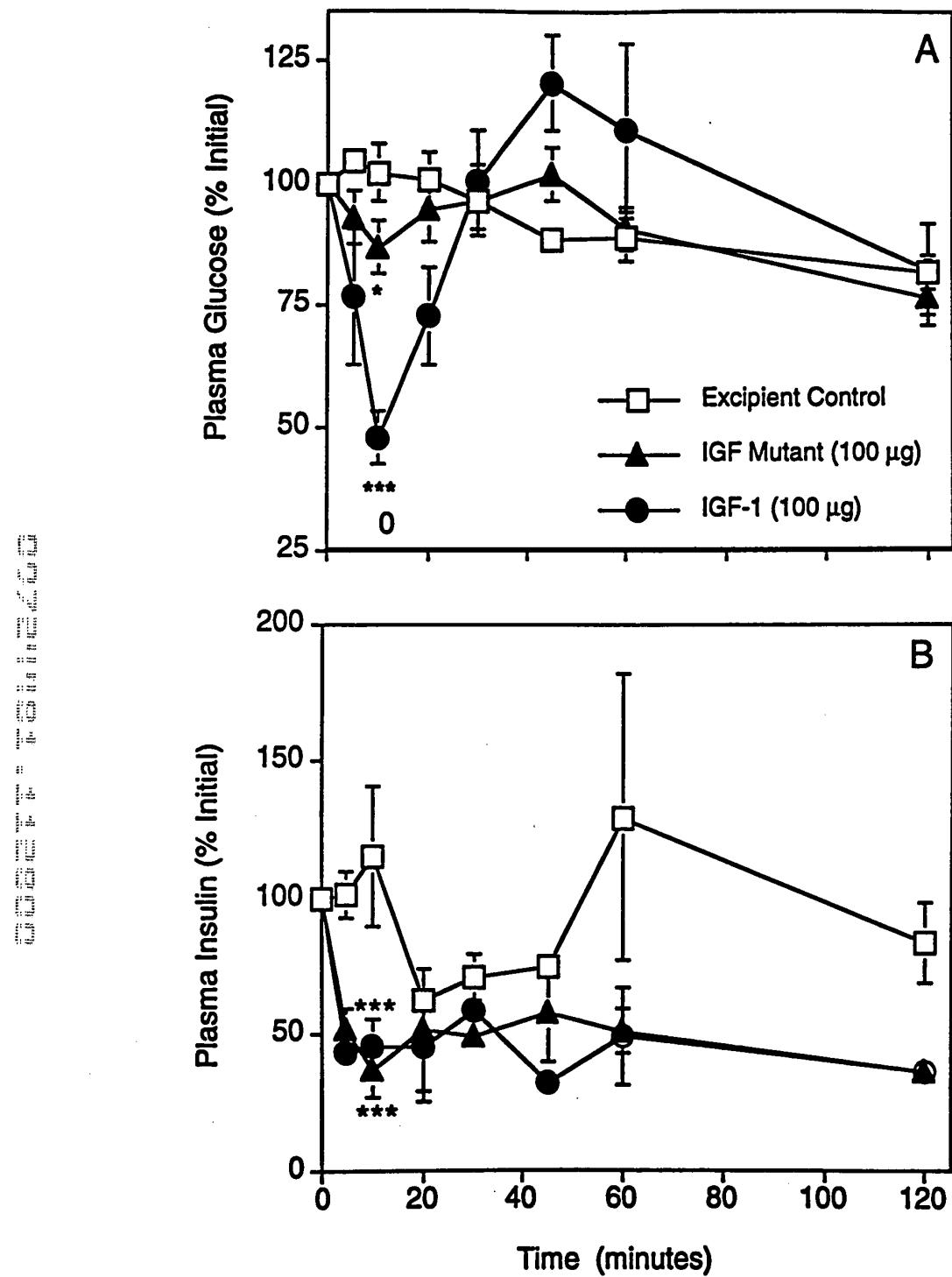


Figure 10

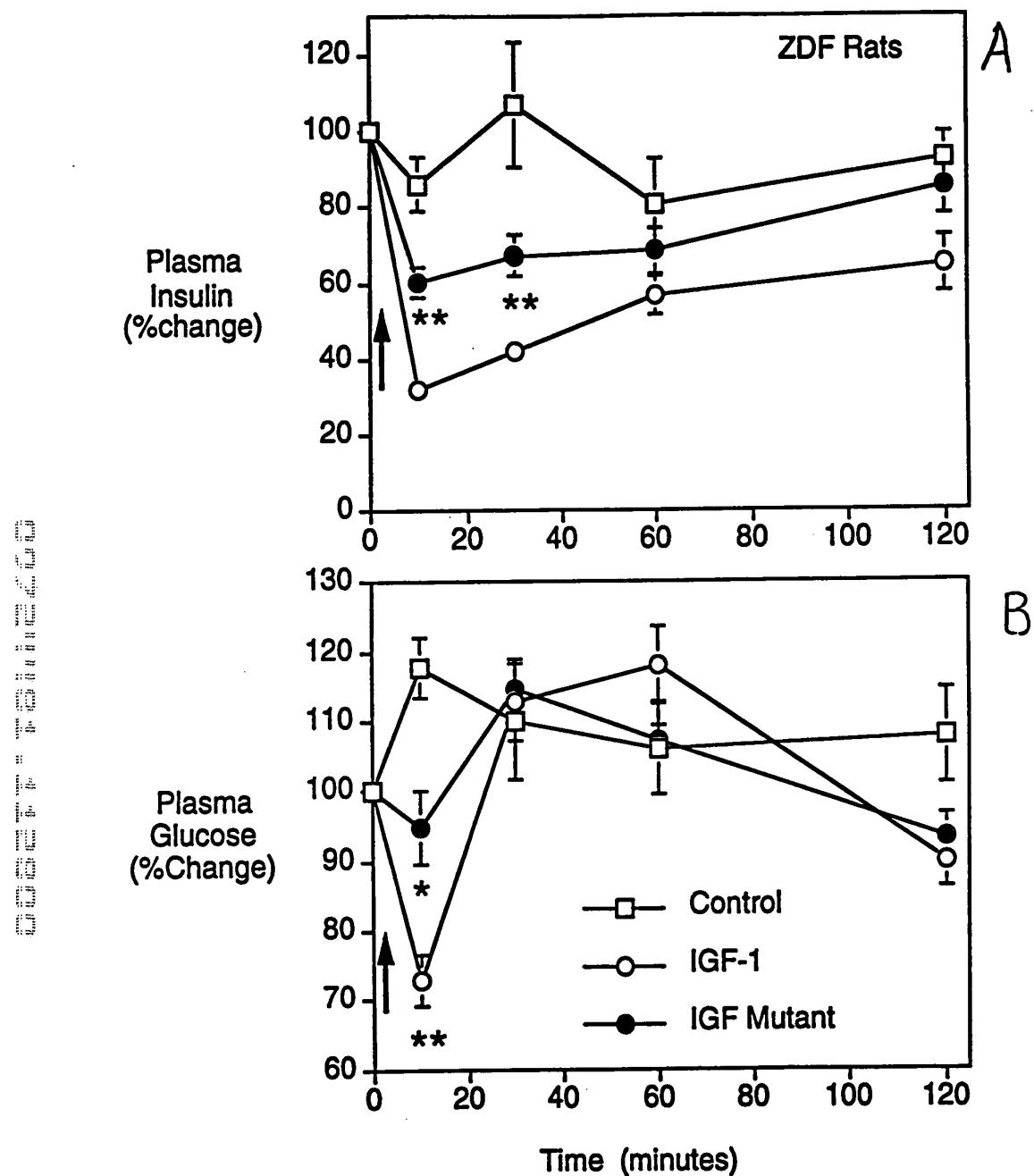


FIG. 11

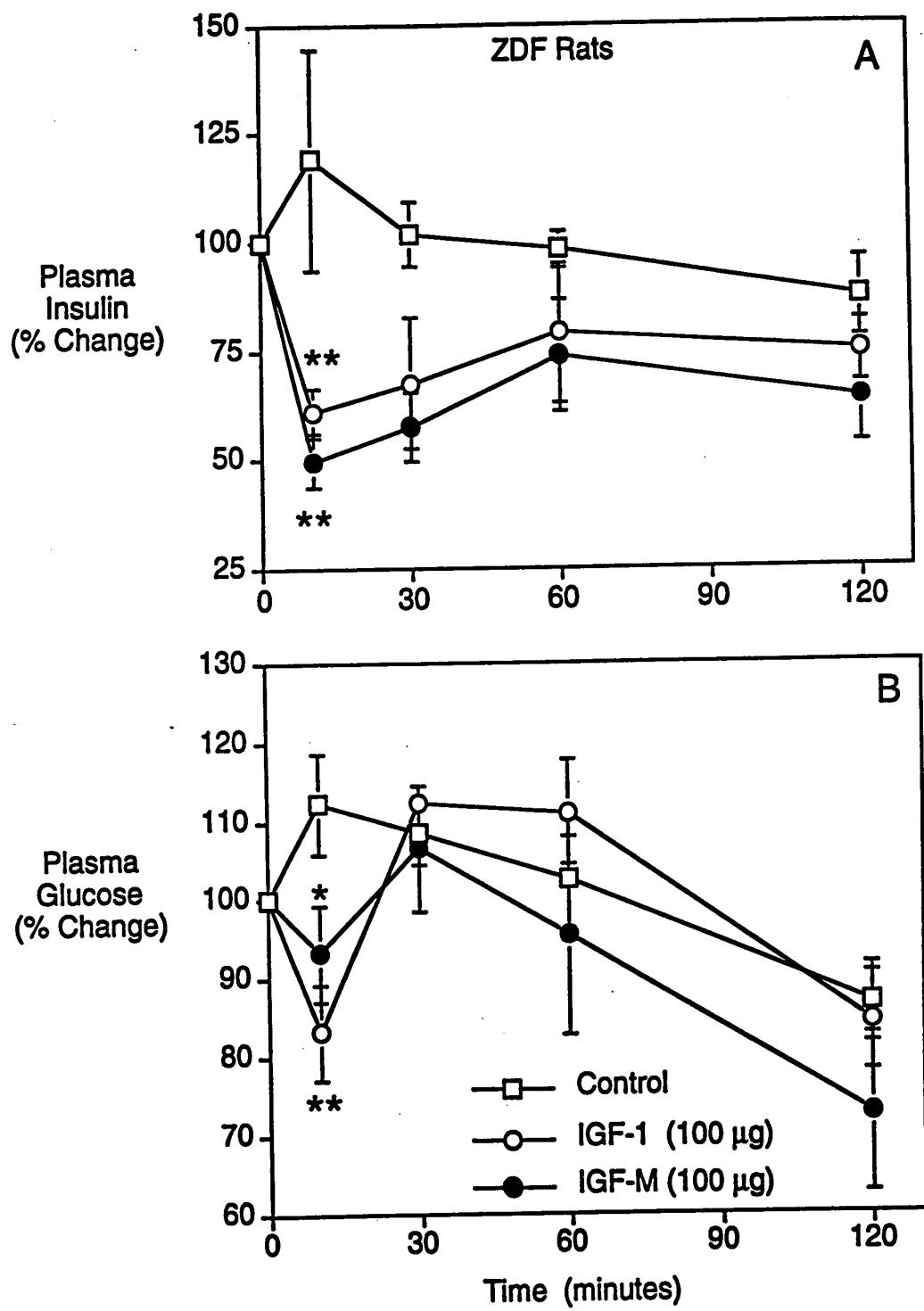


FIG. 12

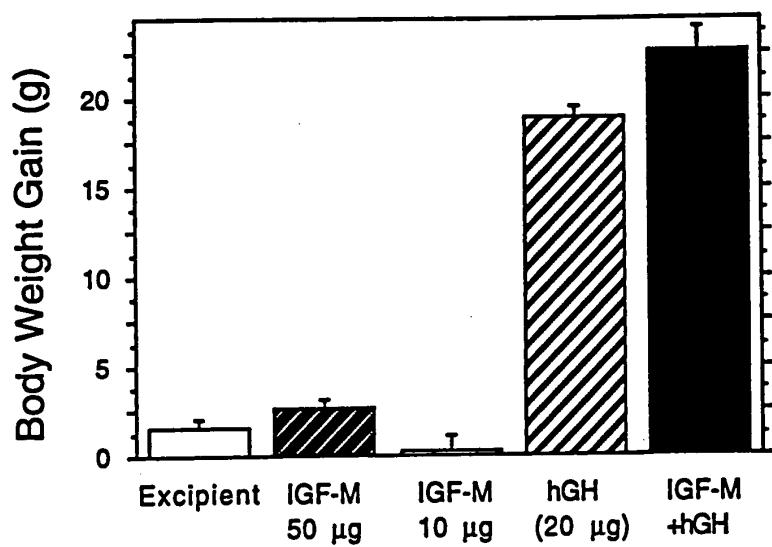


FIG. 13

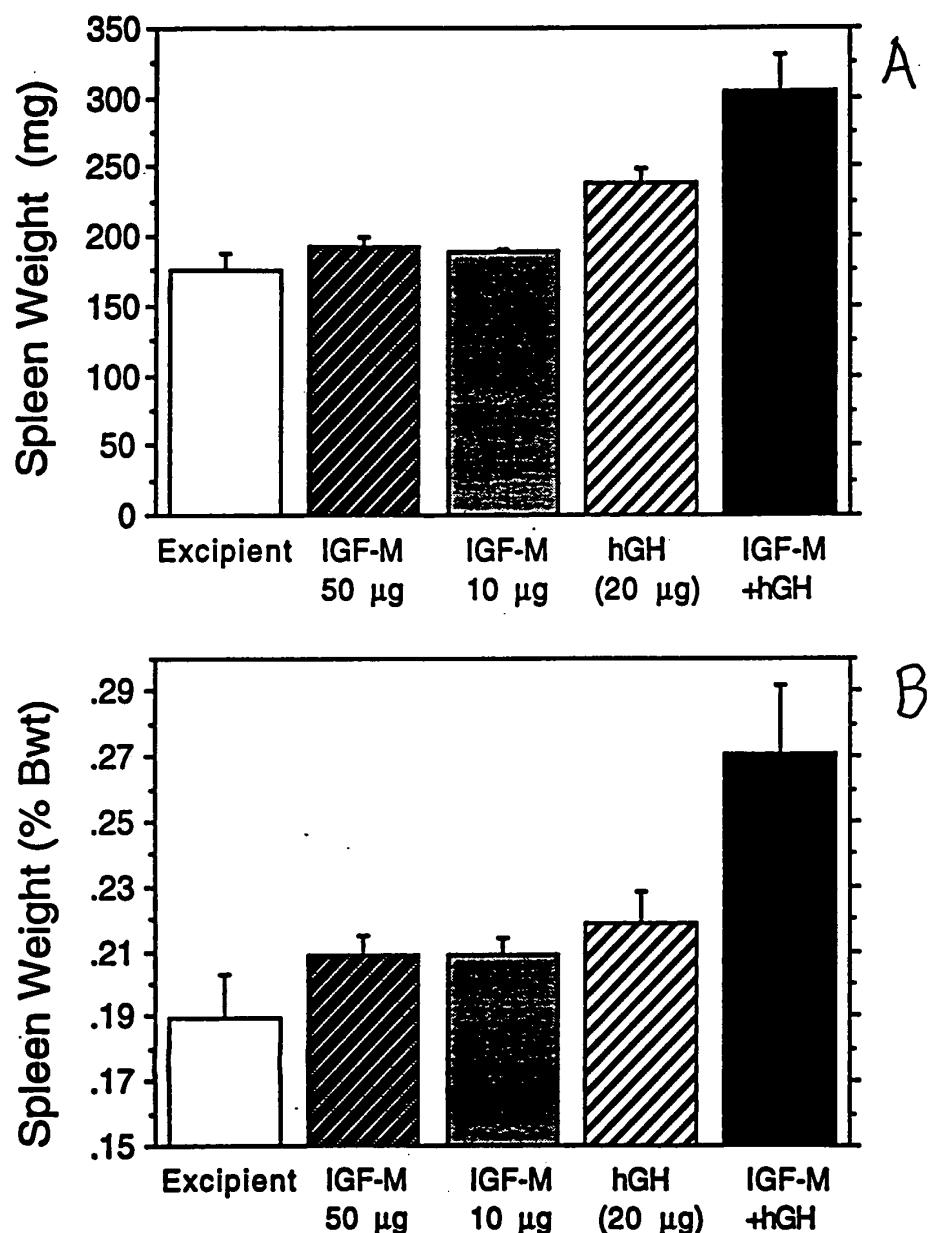
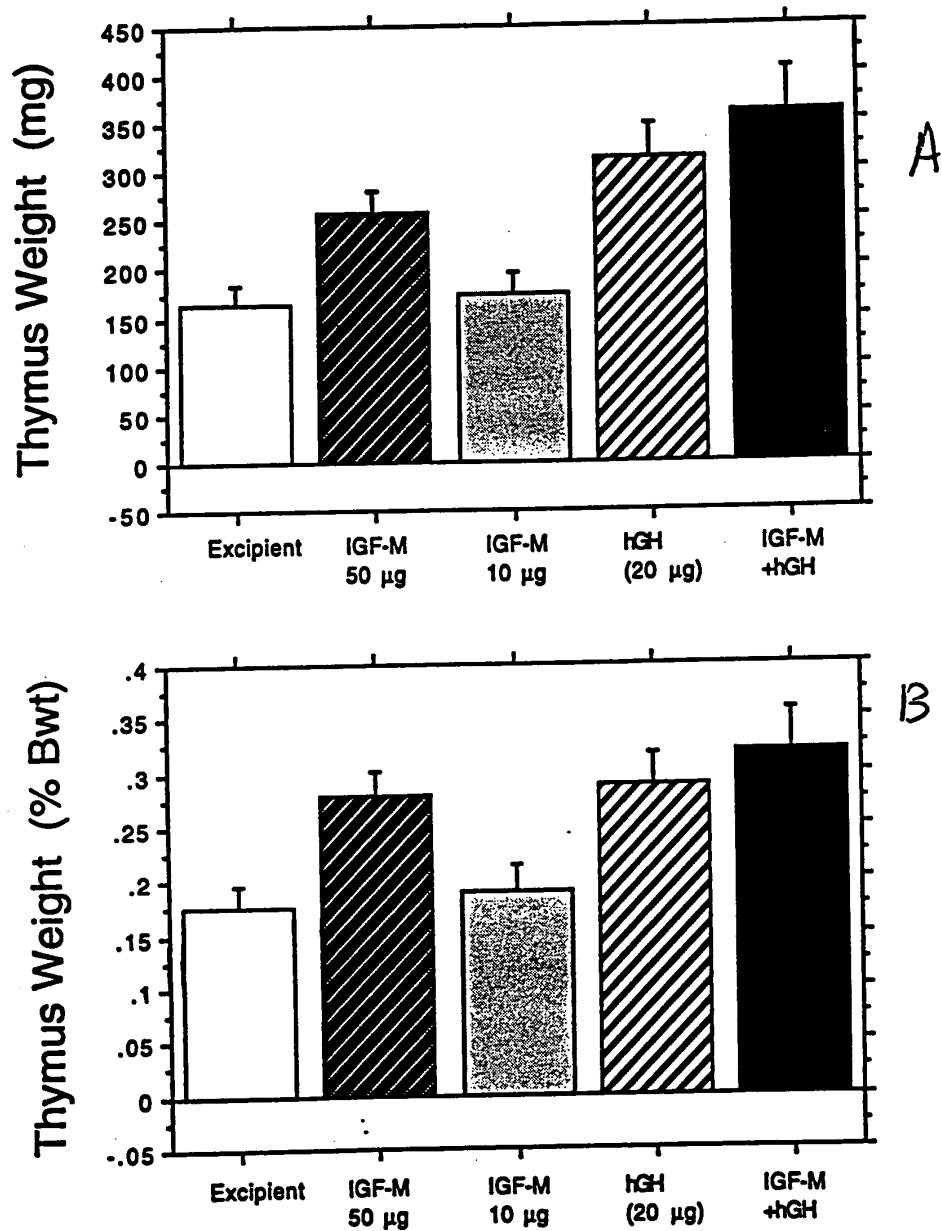


FIG. 14



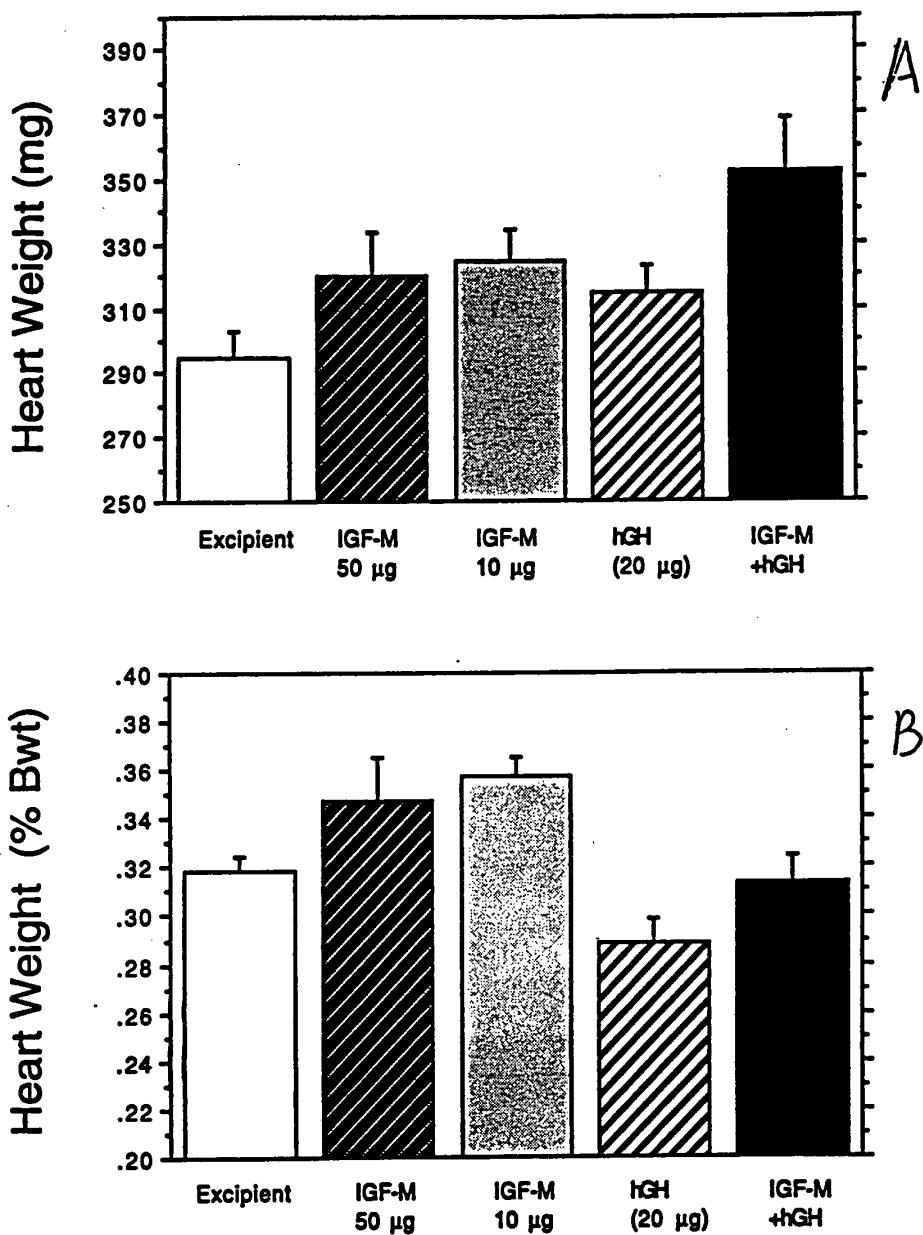


FIG. 15

FIG. 16

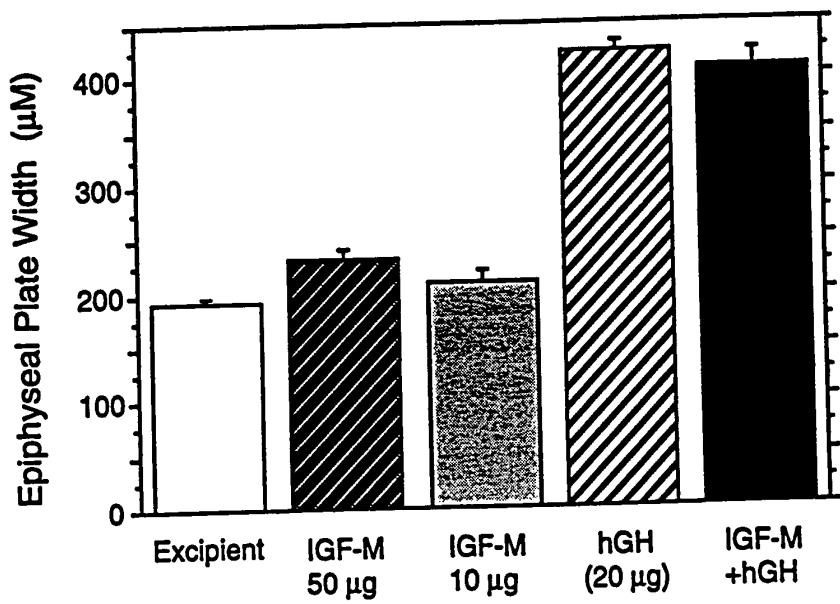


FIG. 17

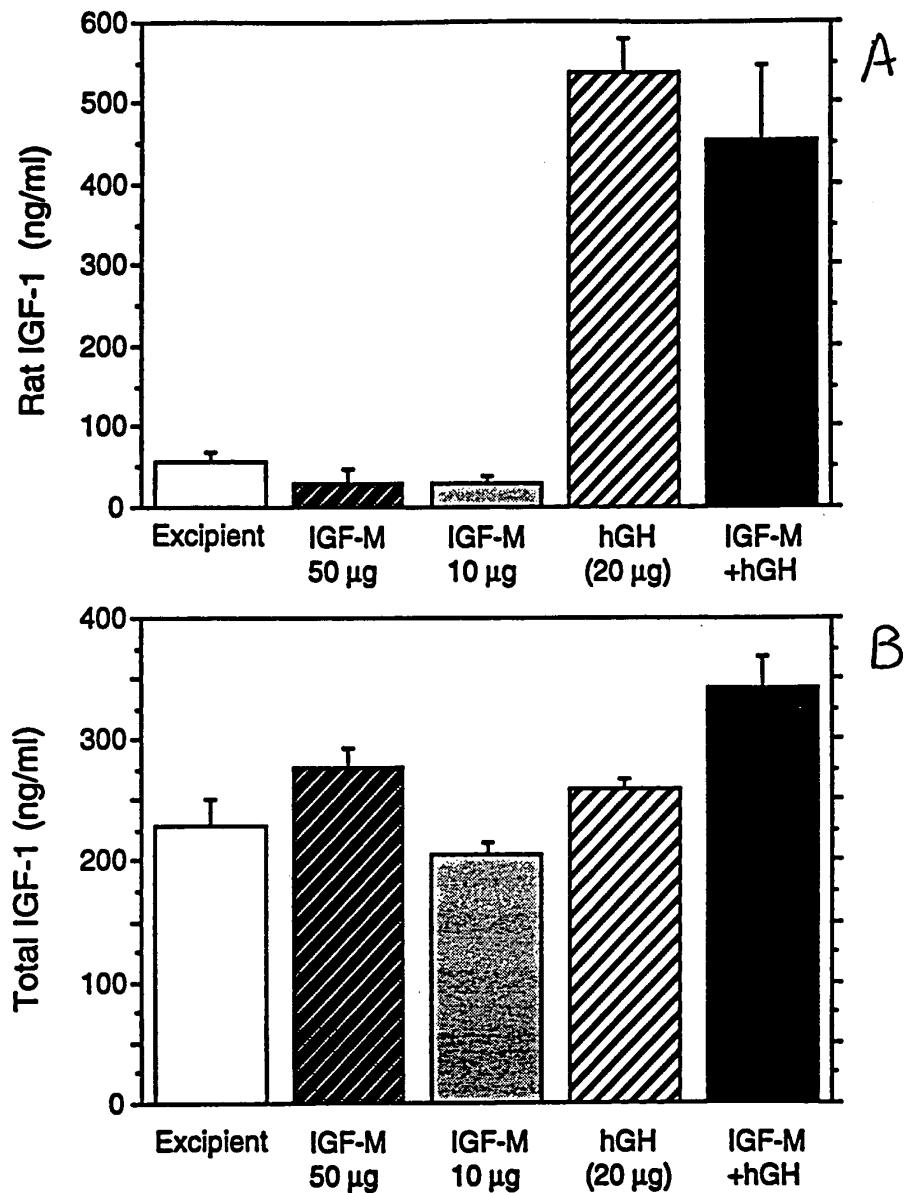


FIG. 18

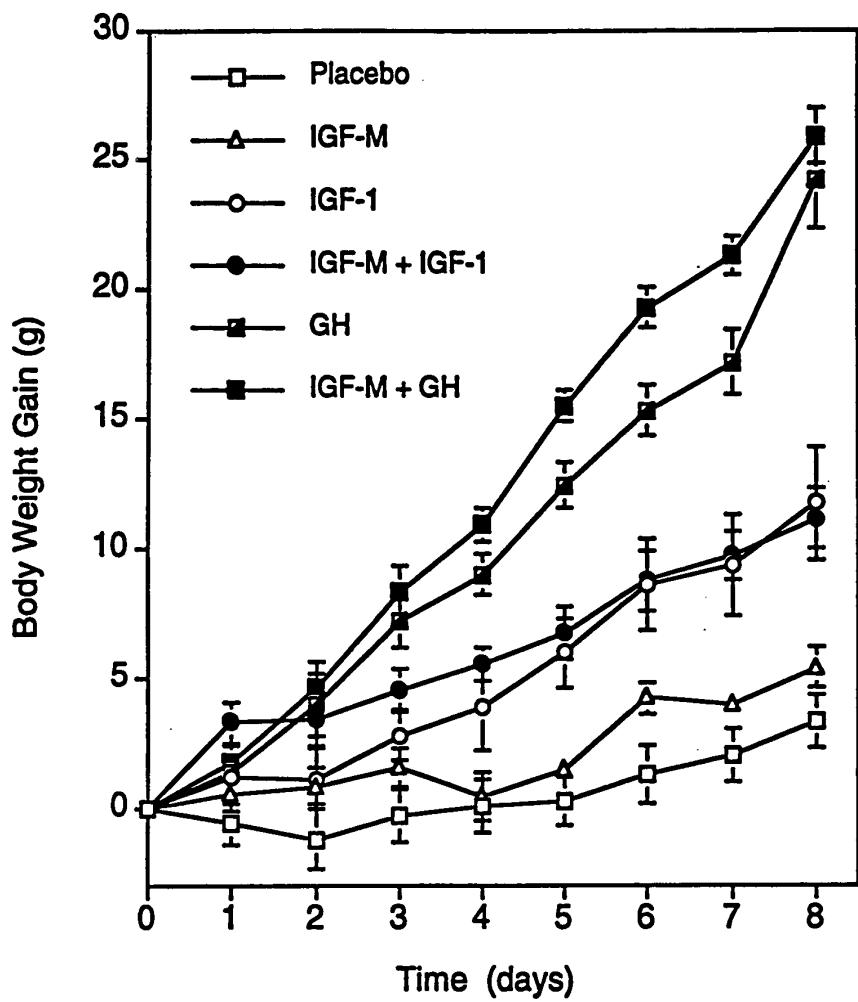


FIG. 19

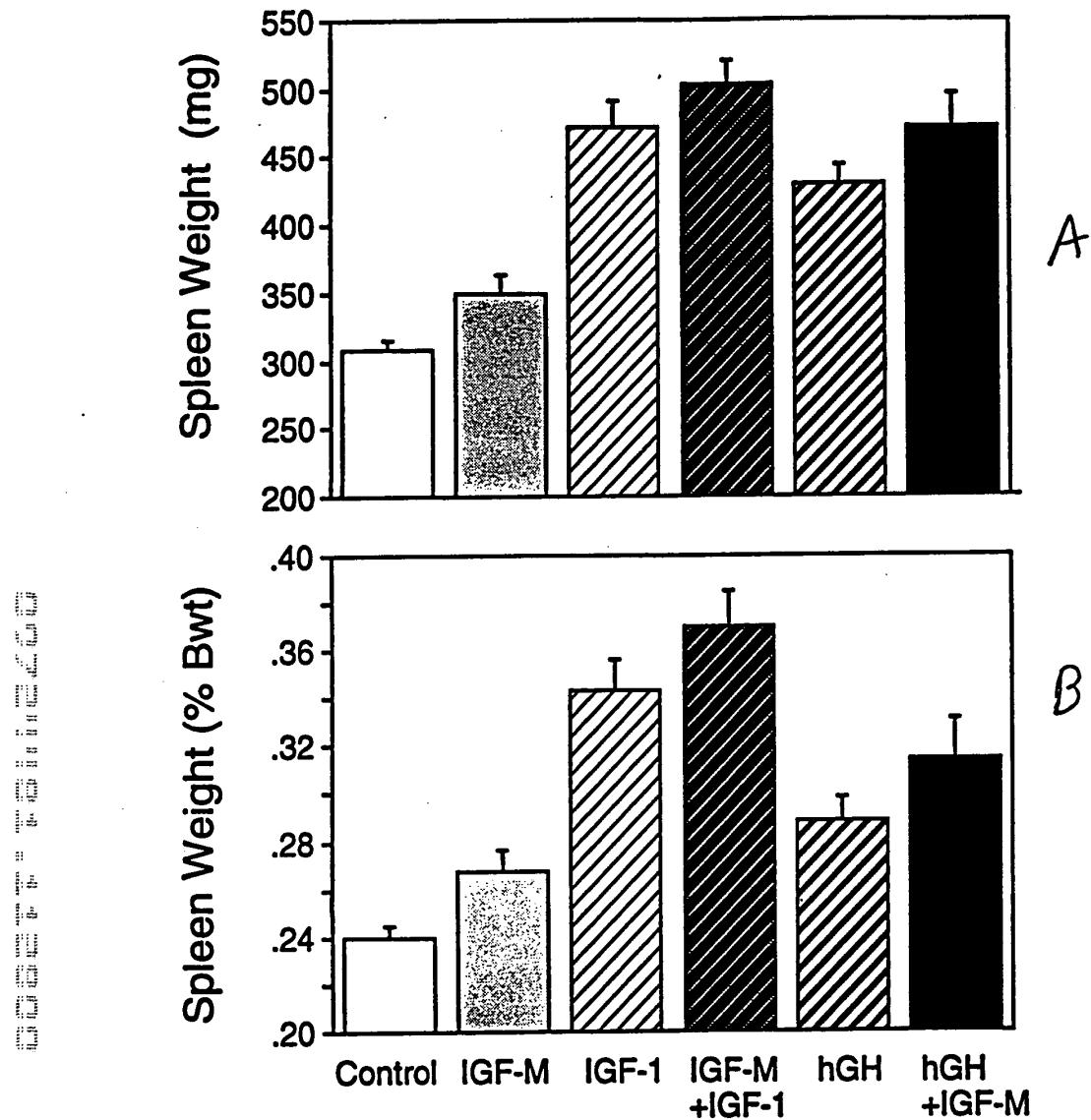


FIG. 20

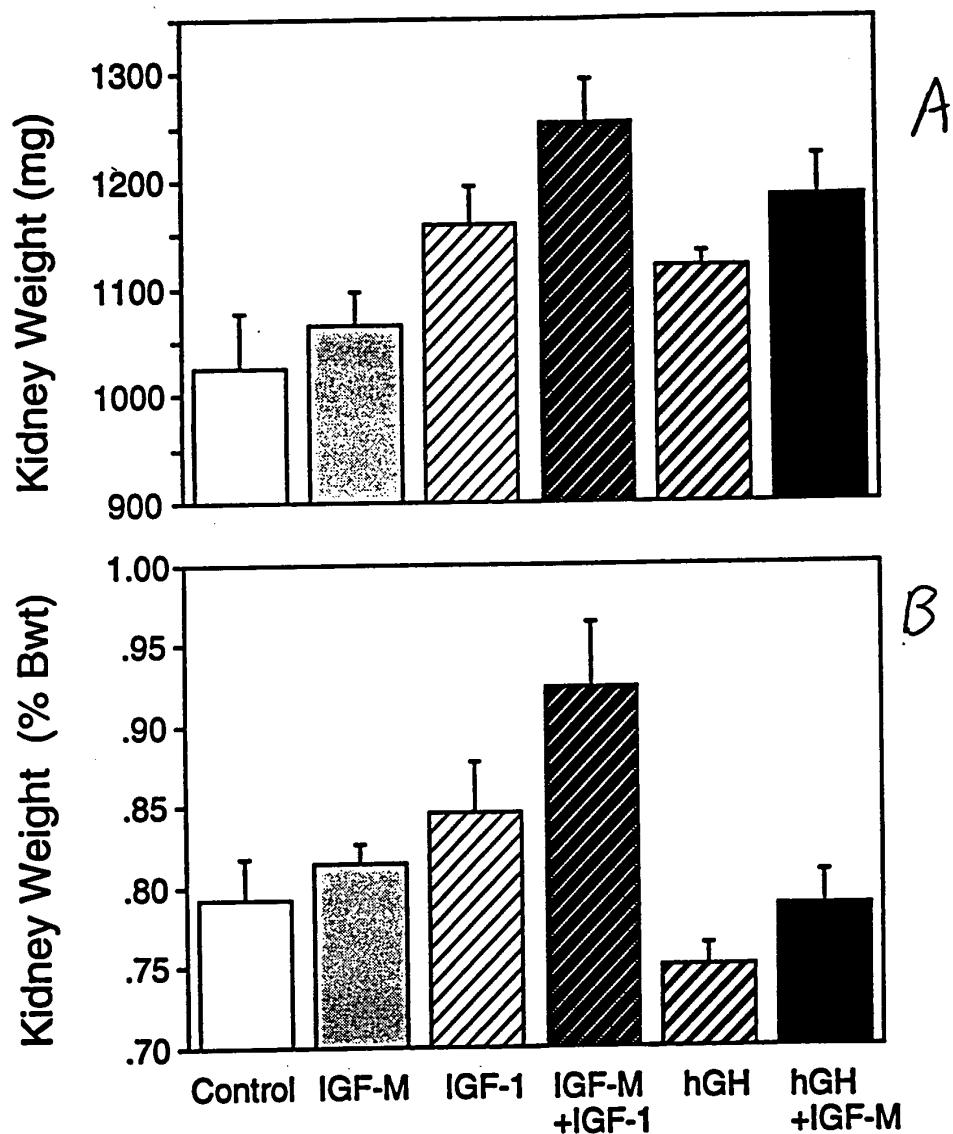


FIG. 21

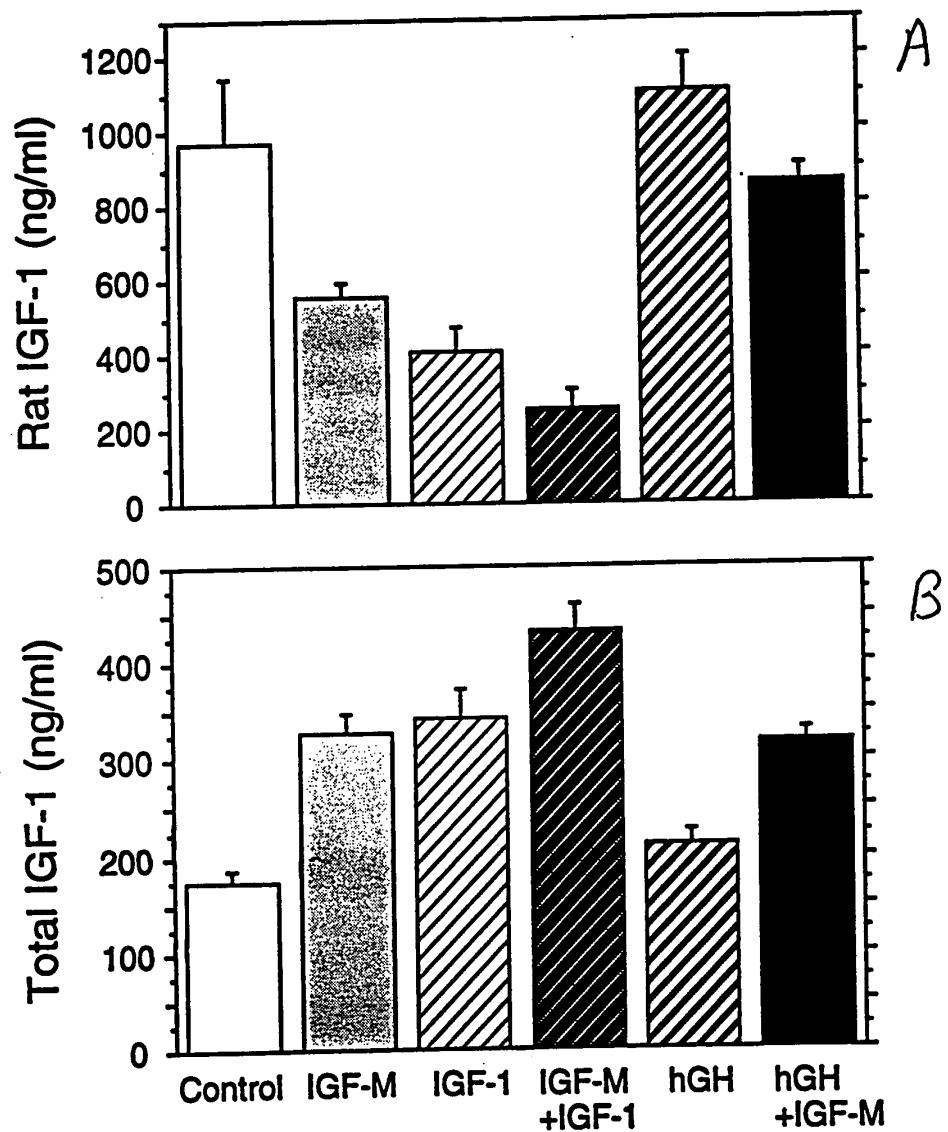


FIG. 22

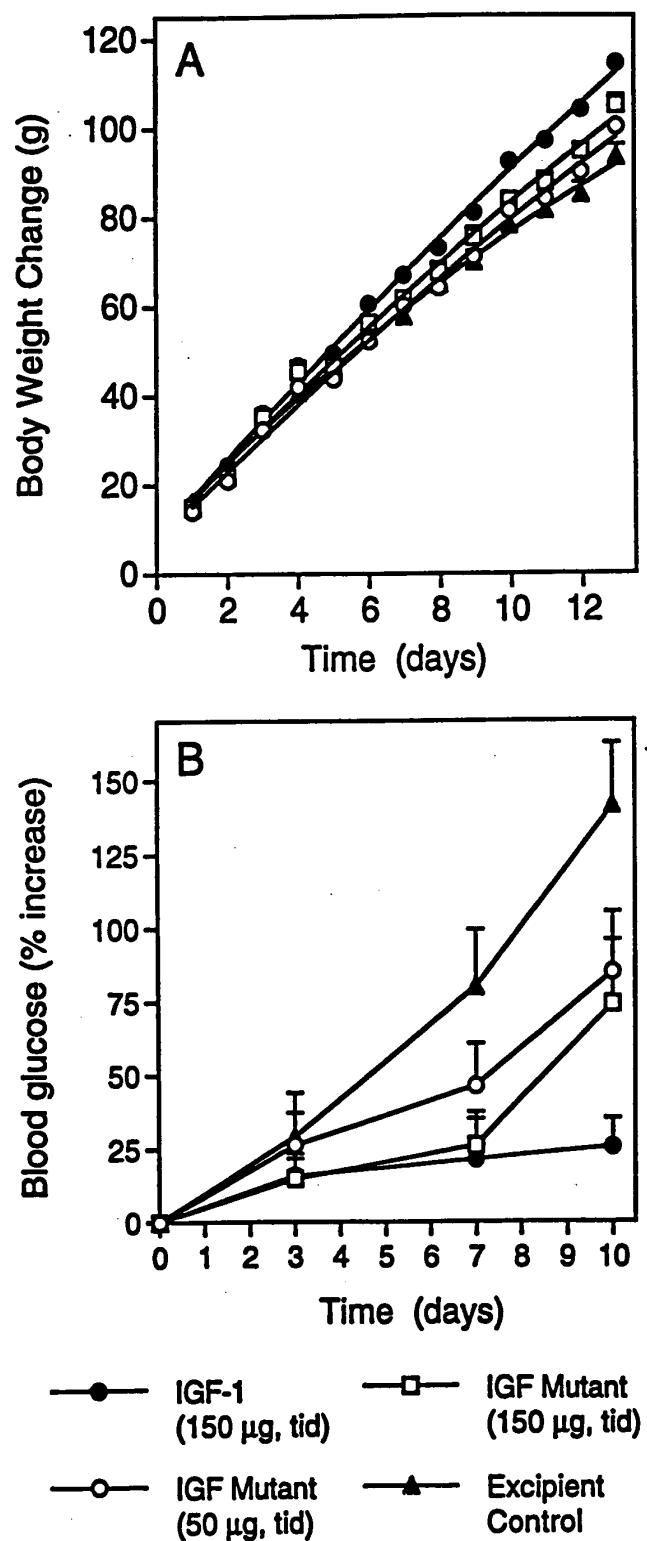
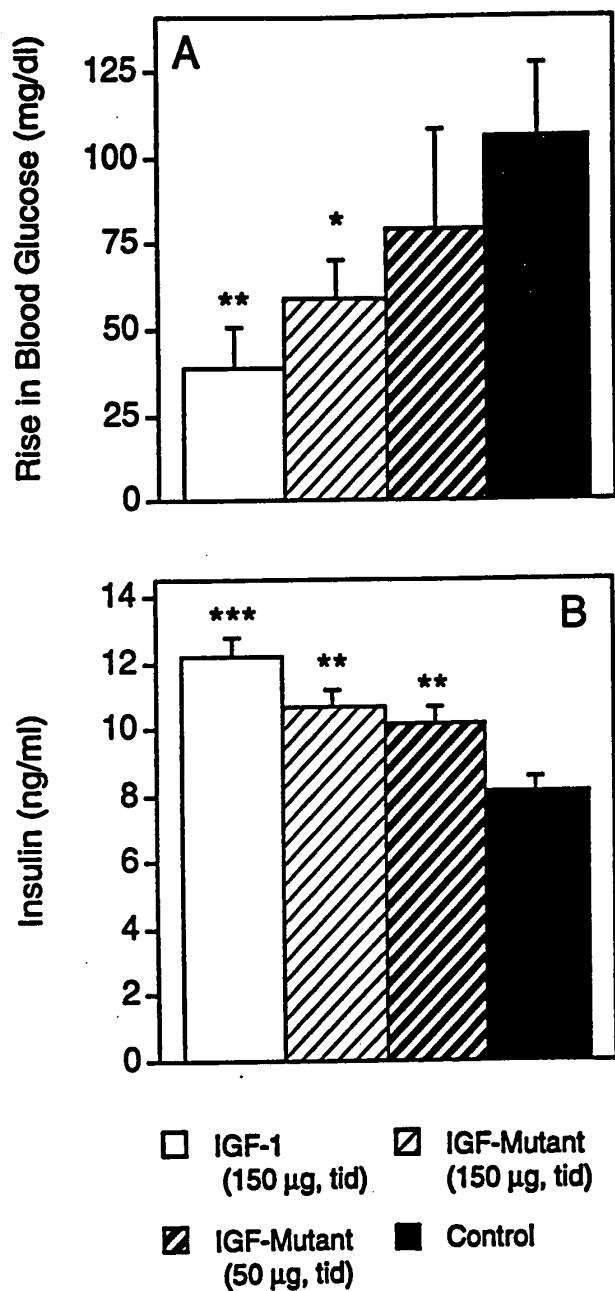


FIG. 23



Plasmid t4.98
length: 5140 (circular)

FIG. 24

1 GAACTCACT TCCGCCAATC TGGGATAGG AAATACAGAC ATTAATAATC TCAATGCTGA GTGTGTTTT AGCTTTCCTC AAGAGAGA AGAGTCGAAT
CTTAAGTGA AGAGGTATGA AACCTATCC TTATGCTG TACCTTTAG AGTAAAGCAGT CAGCTTAA TCCGACGGG TTTTCTCT TCTCAGCTTA
101 GAACTGTCG CCGAGGTTA AGCTTGGAG ATTATGCTCA CTGCAATGCT TCGCAATAGT GGGCAATG ACCAACAGG GTGATTGAT CAGGTAGGG
CTTGACACAC GCGTCATCT TCGAACCTC TANTAGCAGT GAGGTACGA AGCTTATAC CGCGTCTTC TGTTGTCGC CAACTACTA GTCCATCTCC
201 GGGCCCTGTA CGAGCTAAG CCGGATGCCA GCAATCTGCA CGACGATCG GAGCTGCTGC GGGATACCT AACAGGTTA TCGAGCTAC CTCGTCAGTA
CCCCGACAT GCTCCATTTC GGGCTACGGT CGTACGGACT GCTCTATGC CTCGACGAGG CGCTTAA TCTCTCAAT AACCTCGTG GAGCGTCAT
301 AACAGTAT CTTCACACA CCTGCTCAA AGTCTCAGG CCCGACTT ATAGTCGTT TGTCTTAT TTAAATGA TTGTAACCA GTCAGCACT
TTTCATTA GAAAGTGT CGACAGTATT TCAACACTGC CGGCTCTGAA TACAGGAA AACAAATA AACATTAC AACATTGAT CAGGGTCA
101 TCGCTTAA AGGGTACTA GAGGTGAGG TCAATTTC AGGAGATA TCCATTCTCT TCGCCACT ATGGTCGTT TTCTATGC TACAAATGCC
ATGTCATT TCCATAGAT CTCCAACTC ACTAAATAC TTTCCTAT AGCGTAAGA AGACGTAGA TACAGGAA AACAGTACG ATGTTACGG
501 TACGCTTCG CTACCCCAT GCTCTCAGG AACCTTCC CGGCTTAA TCGGCTTAA TCGGCTT TCAACCTCG GAGGATCGG AGGAGCGGC GAGGGTGGCG
ATACCTGAC CAGGGCTA CGACTAGGC TCGCAAGG CGCAATTCT AGACCTCCA ATGCTTAC CTCAGGGC TCCTCGGG CTCCCACTTC
1 SERG LysylAlaLeu TalaAspPro AspArgPhe RyGlyLysAsp PheValAlaGly SerProGly LyGlyIysGlyIysVala GluGlyAspAsp
601 ATCCCGGAA AGGGCTTT AACCTCTGC AACCTCTGC AACCTCTGC GACGGATAT ATGGGTTAG CGGGGGCAT GGTTGTCG ATGGGGGG
TACGGCTT TCGGGGAA TTGGGGACG TTGGAGTCG CGGGCTATA TACCAATC GCACCGCCTA CCAACACAG TACAGCCC GTGCTAGCC
33 ProLysLeu SAlAlAlaPhe AsnSerLeu IAlaSerAl aThrGlyLysTyr IleGlyTyr IaTrpAlaLeu tValValVal tLeuAlaGly LysTrpLys
66 IleLysLeu PheThrSerLysLeu ValAspLeu
701 TACGCTCTG TTAAAGTAT TCACTCGAA AGCAAGCTA TAACCGATA CAACTAACG CTCCTTTCG AGCCCTTT TTGGGAGT TCAACCTGA
ATGCTTCAAC AACCTCTTA AGTGAGCTT TCGTCGACT ATGGCTAT GTAACTTCG GAGGAAAGC TCGGAAAGA AACCTCTAA AACCTCTCA
801 AACATTAT ATTGGCAATT CCTTGTGTC TCCCTTCTA TTCTCACTCC GCTGAAACTG TTGAAAGTG TTGCAAA CCCATACAG AACATCAT
TTTTTATAA TAACGGTTAA GGAACTCAC AACGAAGAT AGAGCTGAGG CGACTCTGAC AACCTTCAC AACCTGTT GGGGTACGC TTCTGATTA
TACGACCTC TGGAAAGACG AACAAACTT AGATGTTAC GCTAACTATG AGCTTGTCT CGGCAATCTT ACAGGGCTTG TAGTGTAC TGGTCGAA
ATGATTCAG ACCTTCTGC TGTTCGAA TCTAGCAATG CGATGATAC TCCACACAG CACCTTACCA TGTGGCAGC ATCAACATC ACCAGCTT
1001 ATCTGCTC TAGCTAGGT GGGGGCTT CTGGTCCGG TGTTTGT TATGAAAGA TGGAAAGC TAATGGGG GCTTGTACG AACCTGGCA
TCACTCACAG ATCGATCTCA CGCCACACCA GACCAAGGG ACTAAACTA ATACTTCTT ACCTTGGT ACCTACGCTT CGATCTGSC TTTCAGGCT
1101 TGAACACCG CTACGCTCT AGCCTAAAGG CAACATGAT TCTGTCGA CTCATTACGG TGCTGTCATC GAGGTCTA TGGGGCTT
ACCTGGCG GATGTCAGAC TCCGATTCG GTTGTACGTA AGACGGCT GATCAAGTC ACCGGCTG CTGCAAGT AACCTCTCA AACGGCGAA
1201 GCTTAAAGTA ATCGTCTAC TGGTCTTT GCTGGCTCTA ATCCCAAT CGCTCAACTG CTCAGGGTG ATATTCAC TTTATGAT ATTCGGTC
CGATTCAT TACACGAG ACCAAATA CGACGGACAT TAACGTTA CGAGCTG CCACTGCCAC TATTACGG AACCTCTA TAAAGGCG
1301 ATATTTACCC TTCCCTCCT CAGGGTTT ATGTCGCC TTTGCTTT AGCGCTGTA AACATGTA ATTCAATT GTTGTACG AACCTACT
TTAAATCTG AAGGGAGGA GTTACGCCAC TACAGCGGG AACAGGAA TCCGGACCAT TTGTATAC TAAAGTAA CTACACTCT TTATTTGA
1401 ATTCGGTCT CTCTTCTGT TTCTTATA TGTTCGCAAC TTATGCTAC TATTTCCTAC TATTGCTAC CTCAGCTG TATGACGCT
TAAGGACCA CAGACGGCA AAGAAATA AACACGGGG ATATTCAC ATAAAGATG AACCTCTG TATGACGCT TATGCTG AACCTGCT

3201 ACTCAGAGCC GGTAAATACGG TTATCCACAG AACAGGGGA AACAGCATGT GAGCAGAAC CGGGAAAGG GCAGGAAAC GAAAAGGC
 TTAAGTTTGG CCATTTATGCC ATTTGGTTC TTTCTCCCTT ATTCGCTCTT TTTCTCTGAC CTCGTTTTCG GTCCTTTCG CATTTCGG

 3301 CGUGTTCGCG GCCTTTTCC ATAGCTCG CCCCCTGAC GACCATCACA AAATCGAGG CTCAGTCAG AGGTGGGAA ACCGACAGG ACTATAGA
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 3401 TACCAAGGGT TTCCCCCTGG AGCTCCCTC GTGGGCTCTC CTGTTGGAC CCTGCCGCTT ACCGGAAAC CGCTCTGGCTT TCTCCTTCG GGAGGGAA
 ATGGTCCGCA AAGGGGGACC TTGGAGGG CACGGGAGAG CACAGGCTG GAGGGGAA AGAGGGAA AGAGGGAC CCTGGGCTT

 3501 CCCCTTCCTCA TAGCTCAOGC TGTAGTTCCTC TCACTTCGT GTAGGTCGT CCTCCANGC TGGCTCTGT GCACGAAACCC CGGGTCAAG
 GCGAAGACT ATCGAGTCGG ACATCCCTAG ACTCAGCCCA CATCCAGCA CCTCTGGCA GCGGGTGGTGG AGCGAGCAAG CGGGCTGGG GGGCAGTGG CGCTGGGAC

 3601 CGCCTTATCC GGTAACTTC GTCCTAGTC CAACCCGGTA AGACAGCT TATGCCAATC GGACAGGCC ACTGGTAAAC GGATAGCAG AGCGAGGT
 GCGGAATAGG CCATGTAGATAG CAGACTCTAG GTGGGCCAT TCTGTGCTGA ATAGGGTGA CCTCTGGCA TGACCATGTT CCTATGTC TCGCTCCATA

 3701 CTAGGGGTG CTACAGGTT CTAGTACGG TGGCTTAATC ACGGCTACAC TAGAAGGAA GATGGGTA TCTGGCTCT ECTGAGGCA GTTACCTCG
 CATCCGCCAC GAATCTCA GACCTCACCC ACGGATTA TGCGATGTT ATCTCTCTG CTAAACCT AGACGGAGA CGACTGGTT CTAGGGAGC

 3801 GAAAAGAGT TGGTAGCCCT TGAATCCGGCA AACAAACAC CGCTGGTAGC GGGGGTTTT TGTGGCA AACAGGTT CGTGTGCA GCGAGGATT
 CTTTCTCA ACCATCGAGA ACTAGGGCTT TTGTTGGTG GCGACCATCG CCACCAAA AACAGGTT CGTGTGCA TGGCTCTT TTTTCCTAG

 3901 TCAAGAGAT CCTTGATCT TTCTACGG GTCTGGACCT CAGTGGACG AAAACTCAGG TTAAGGATT TTGTCTAGA CTTATCAA AACAGTCTC
 ACCTCTCTCA GGAAGCTAGA AACATGCC

 4001 ACTTAGATCC TTTTAATTA AAATGAGT TTAAATCA TCTAAGTAT ATATGACTAA ACTGGTCTG ACAGTTACCA ATGCTTAC AGTGGAC
 TGGATCTAGG AAATTTAT TTACTCTCA AAATTTAGT AGATTCTATA TAACTCTATT 1GACACAGAC TCTCATGGT TACGATTTAG TCCTCCGGT

 4101 CTATCTACCC CAACTCTCTA TTCTCTCAT CCTAGTTCG CTCAGCTCCC GTGGCTCTAG TAACTCTAT AGCGGGGGC TTACCTCTG GCGCGAGTC
 GATAGACTCC CTAGACAGT AAAGCAGTA GGATCTACCC GACTCAGGG CACCACTCT ATCTGCTA TCCCTCTGG ATCGTACAG CGGGTCTCG

 4201 TCGAATGATA CGCGAGACCC CACGCTCACC GTCTGGAGAT TTATCAGCAA TAAACAGGC AGCGGGAGG GCGCGAGCA GAGTGTCTC TGCAACTTA
 AGTTTACTAT GGCGCTCTGG GTGGAGGG CCGAGGTCTA ATAGTCGT TTTGGTGG TGCGSCTCC CGGTCTCTT CTTCACCCAGG AGTTGAACT

 TCGGCTCTCA TCGAGCTAT TATTCCTGC CGGGAGCTA GAGTAAAGT TTGGCAGTT AATAGTTCG GCAAGCTT TGCCTATGCT GCAGTCATCG
 AGGGGGAGGT AGCTCTGATA ATTAAACAG ACCACAGTGC GAGCAGCAA CCTACCGAA GTAGTCGG AGCGGGTT GTCTAGTCTCG CTCAGTGTAC

 4401 TGGTGTACG CTGGCTGGT GTATGGCTT CTTCAGCTC CGGTCCAA CGTACAGGGC GAGTACAG AGCGGGCTT TTGGGGTAC AACGGGTT
 ACCACAGTGC GAGCAGCAA CCTACCGAA

 4501 CTCTCTGGT CCTCCAGTCG TTGTCAGAG TAACTGGCC CGAGTGTAT CACTCAGCT TATGGAGCA CGTACAGTAC AACGGGTT TTGGCCATC
 GAGGAGCCA GGAGCTTACG AACAGCTTC ATTACACGG CCTACATA GTGGAGCA ATACGGCTT GAGGTTAAC GAGAGGAA GTAGGGAG

 4601 GTAAAGATGCT TTCTCTGTCAG TGGTGTAGTC TCAACAGT CATTCTGAGA ATAGTGTAG CGGGAGCGA GTGGCTCTG CCGGGGCTCA AGCGGGATA
 CATTCTGAGA AAAGACACTG ACCACTCATG ACTTGTCTA GTAGACTCT TATCACATAC GCGCTGGCT GAGGAGAC GGGGGAGT TGTCCTAC

 4701 ATACCGGGCC ACATAGCAGA ACTTAAAG TGTCTCTAT TGGAGGCTT GAGGAGCTT CGGGAGCTT GAGGAGCTT GAGGAGCTT
 TATGGCGGG TCTATGCTCT TAAATTTG AGCGGACTA ACCTTTCTCA AGAAGCCCCG CTTCAGAG TTCTCTAGT GCGACACTT CTAGGTCTAG

 4801 GATCTGAAACCC ACTCGTGTAC CCAACTGATC TTCACTCTCA CCAGGGTTT CGGGAGGCA AACAGGGAA GCGAAATACG CGCAAGAAC
 CGATAGCTG TAACTGCTG GGTGTACTG AGTGGTGTAG AACAGGCTT TGTCTCTT GAGGAGCTT

FIG. 24 (con't)

4901 GCGGAAAGGG CGACACGGAA AGCTTAAATA CTCATACCTC TCCCTTCA ATATTATGA AGCATTTTC AGGGTATG TCTCAGGAGC GGATACAT
CCTTAAATCCC GCCTGTGCCTT TACACCTAT GAGTATGAGA AGGAAGAT TATAAATCT TCGTAAATG TCCGATAAC AGACTACTCG CCTATGATA
5001 TGTATGAT TTAGAAATAA AACAAATAG GGTTCCGG CGCATTTCC CGAAAGTGC CACCTGAGCT CTAAAGAACC ATTTATCA TCACTTAAAC
AACTTACATA ATCTTTA TTGTATTC CCCAAGGCG GTGTAAGGG GCTTTACAG GTGGACTGCA GATTCTTGG TATAATAGT ACTTTATG
5101 CTAAATAT AGGGTATCA CGGGCTCTT TGTCTCTCA
GATATTTA TCCGATAGT GTCGGGGAA AGCAGAGAT

FIG. 25

**gene-8 Naïve Library Enrichments:
Selection using 4 Library Pools Each**

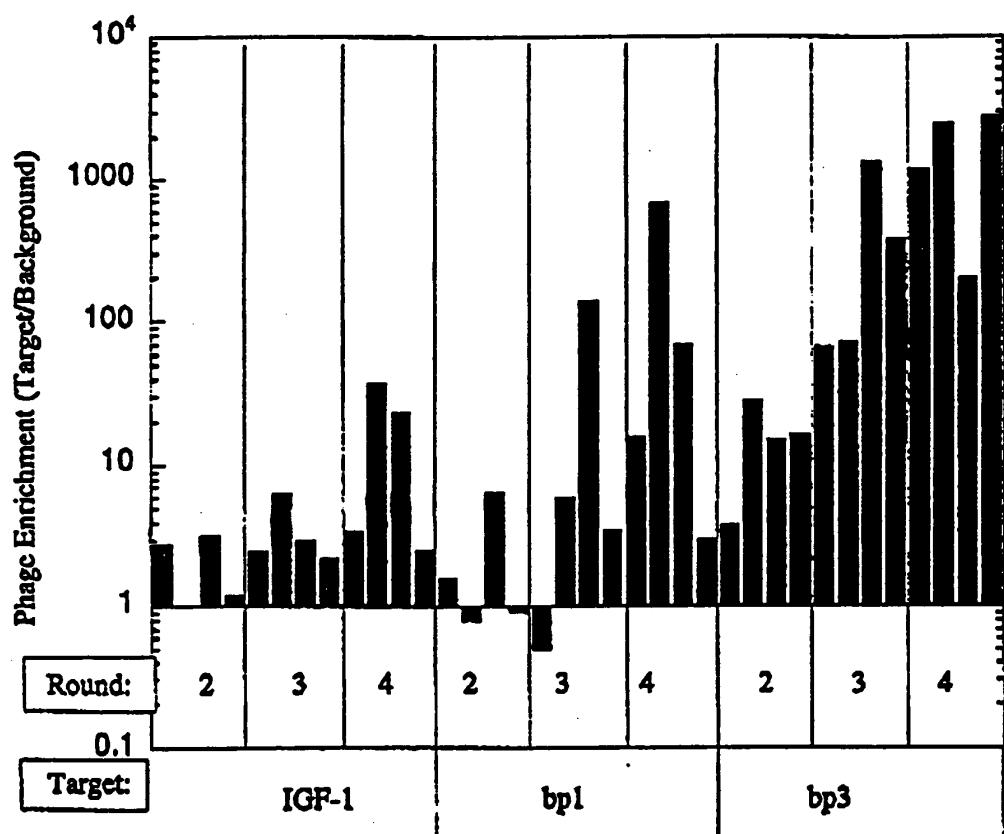


FIG. 26

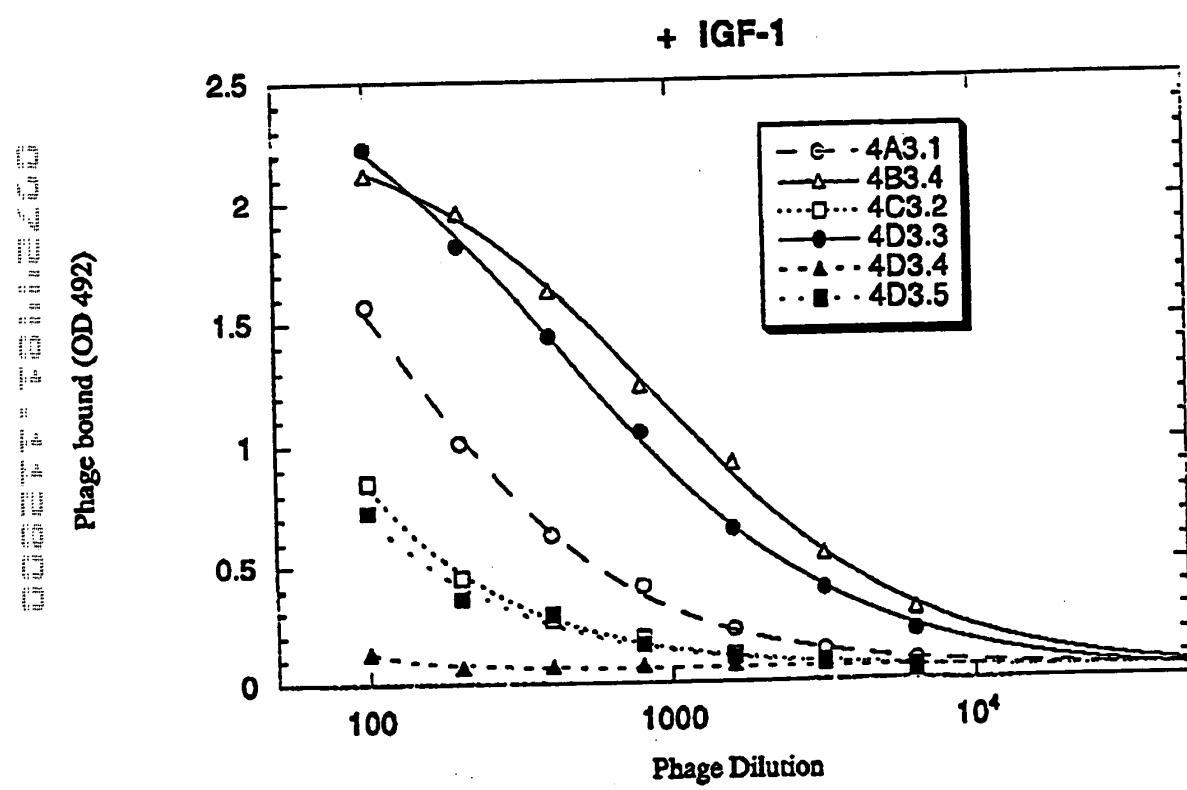


FIG. 27

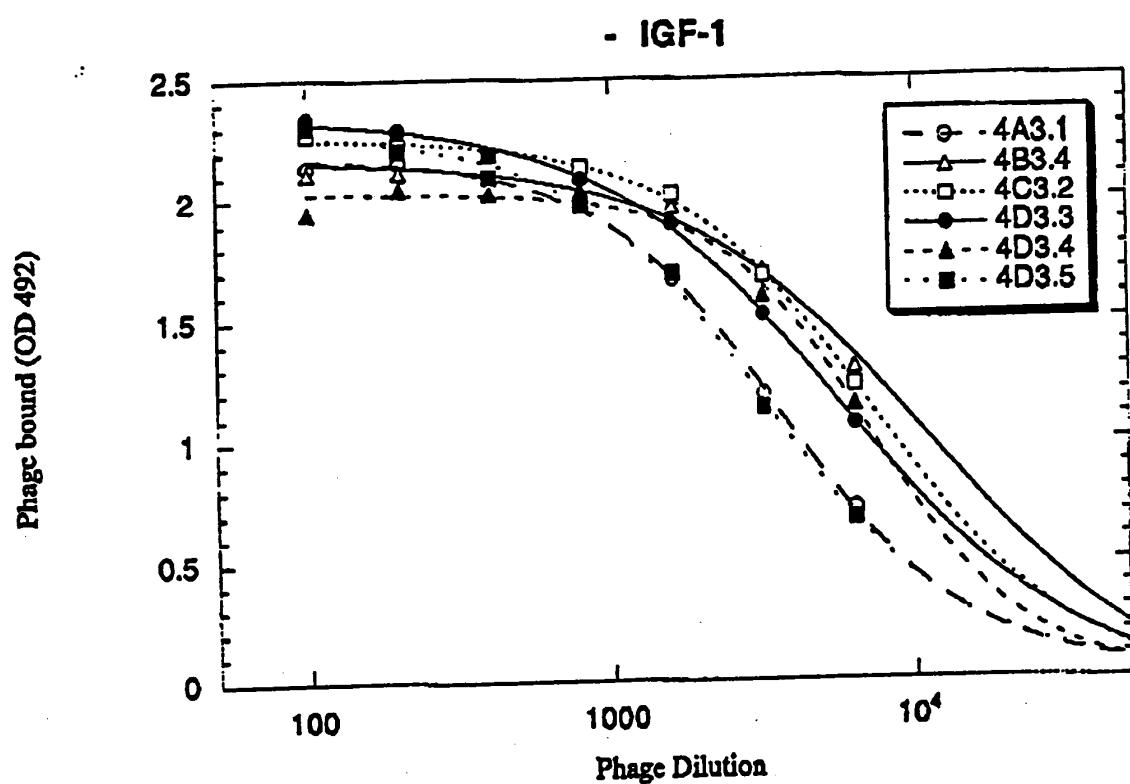


FIG. 28

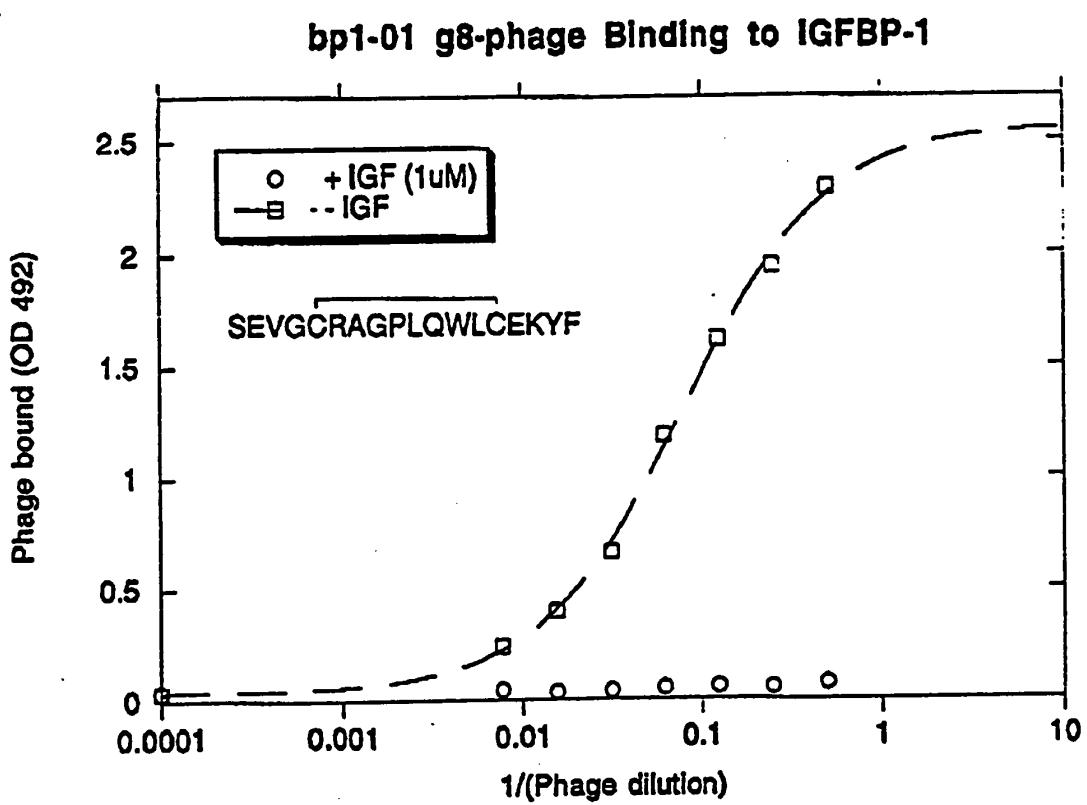


FIG. 29

(A) PHAGE BLOCKING ASSAY

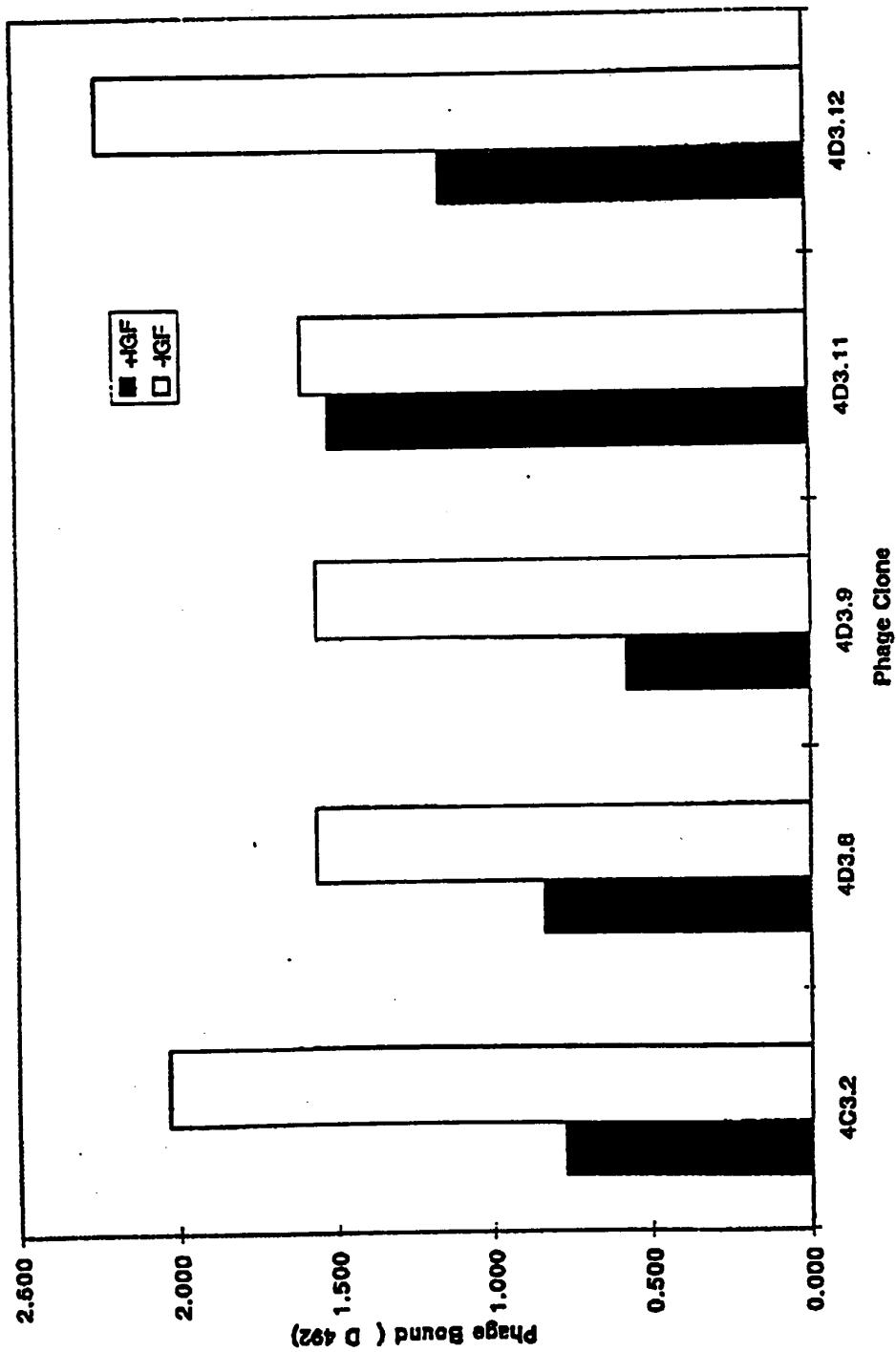


FIG. 30

(B) PHAGE IGF BLOCKING ASSAY

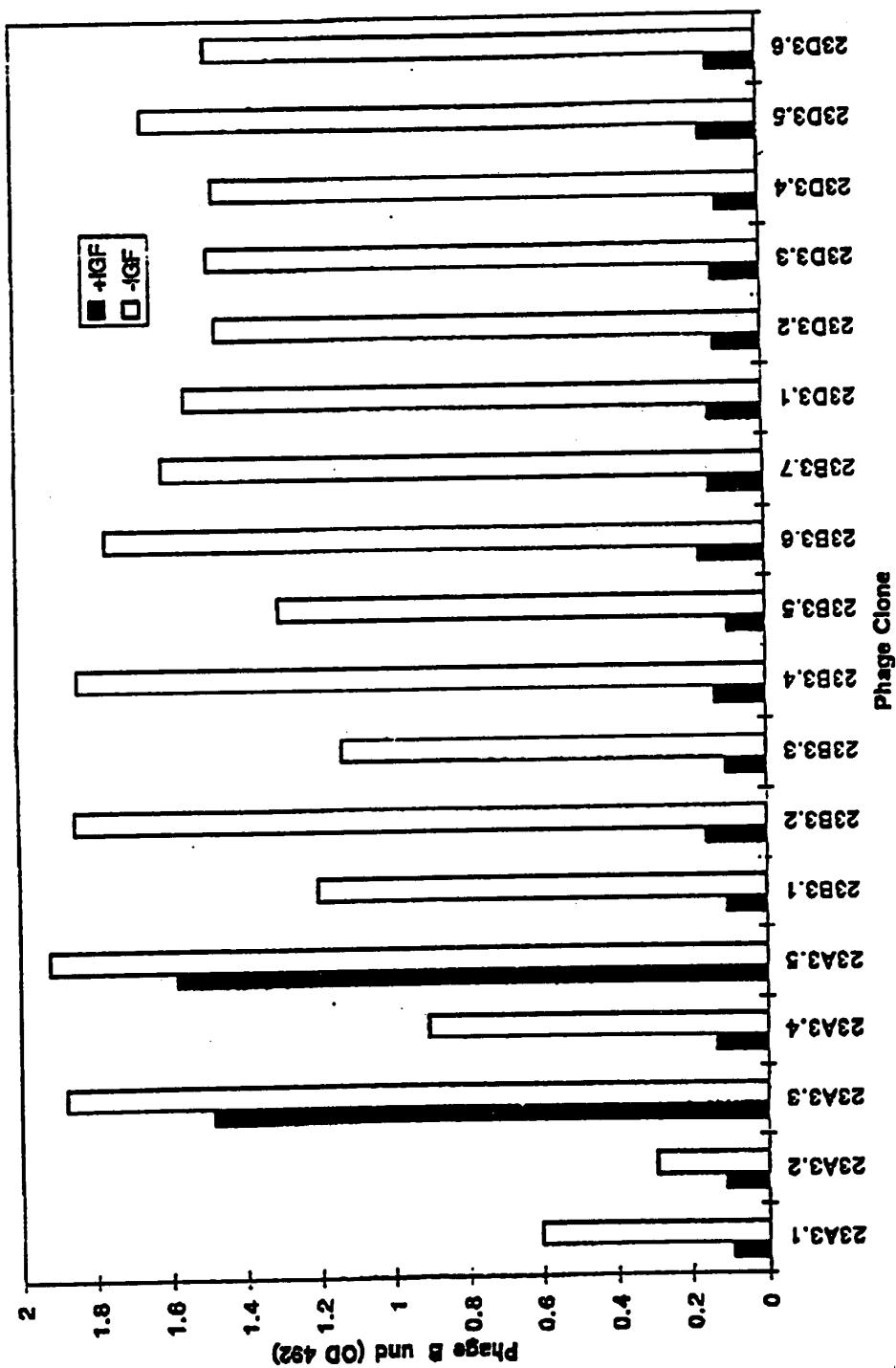


FIG. 31

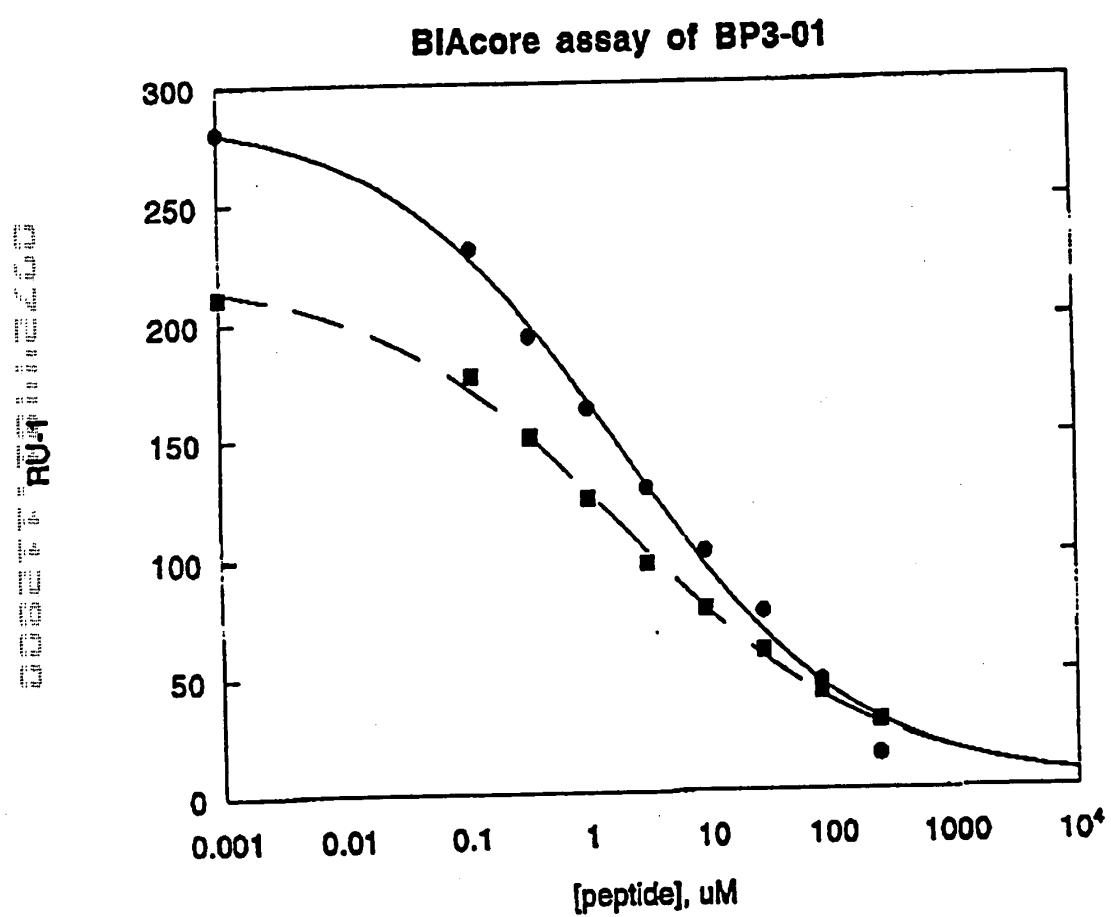


FIG. 32

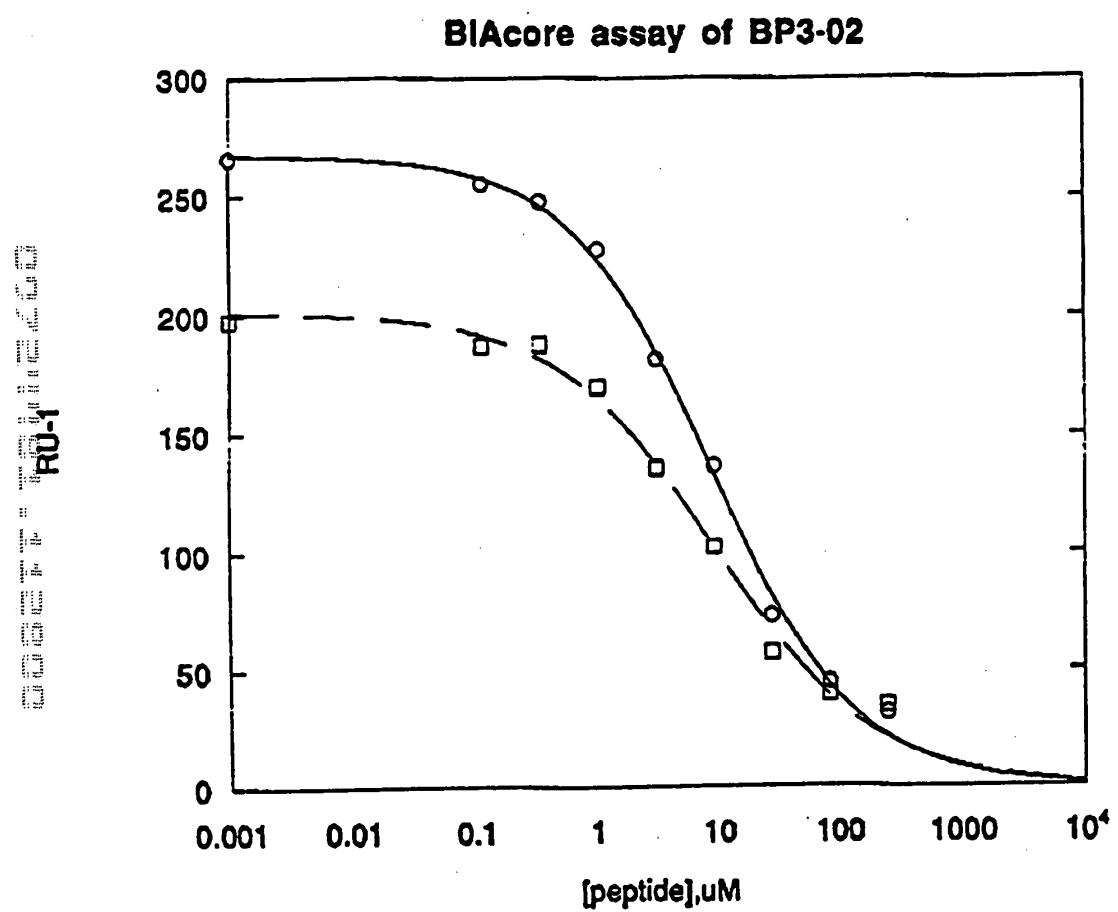


FIG. 33

Inhibition of biotin-IGFBP-1 Binding to IGF-1

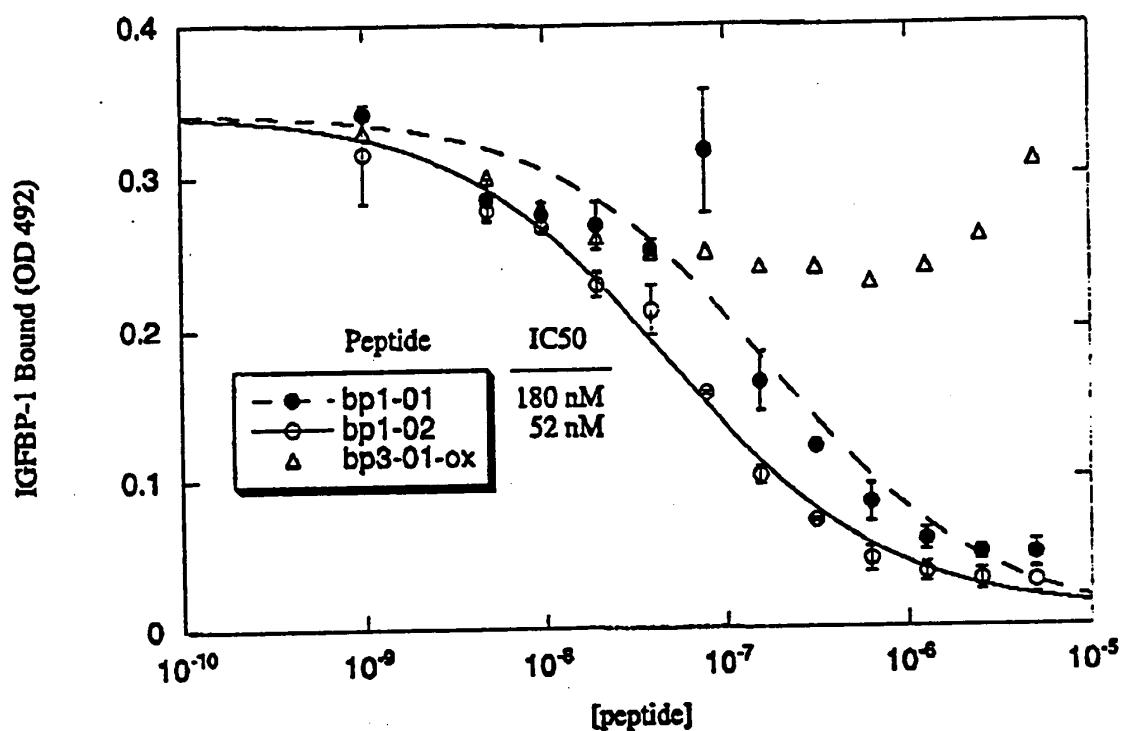


FIG. 34

Inhibition of biotin-IGFBP-3 Binding to IGF-1

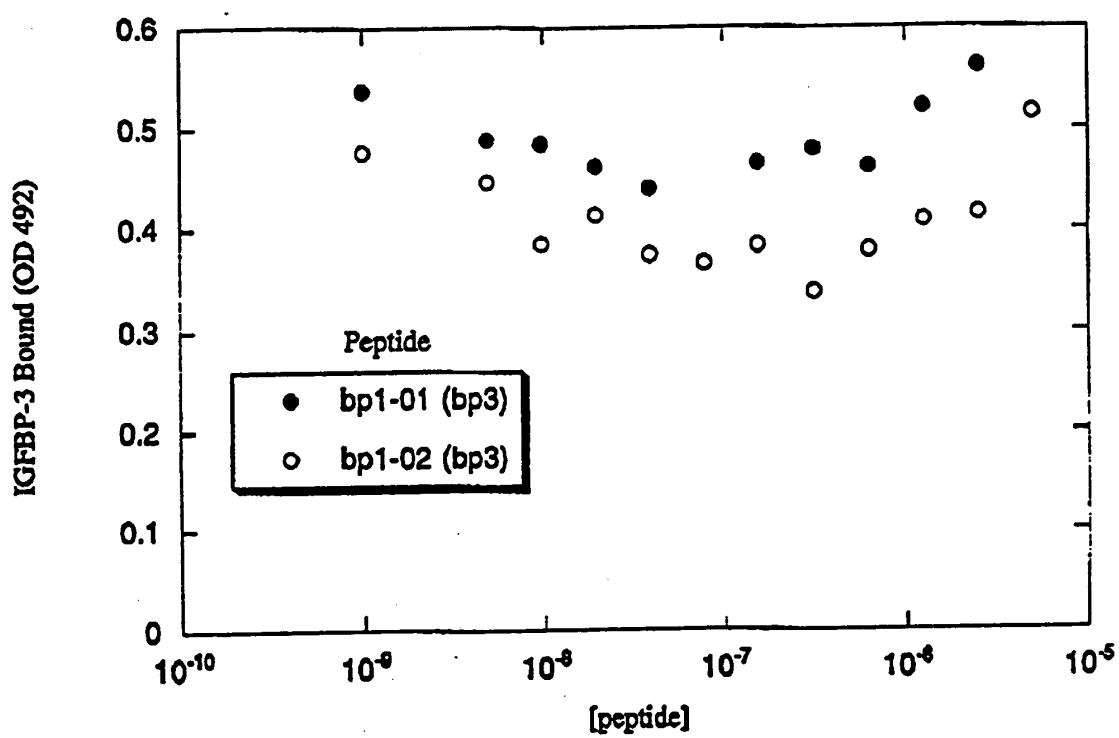


FIG. 35

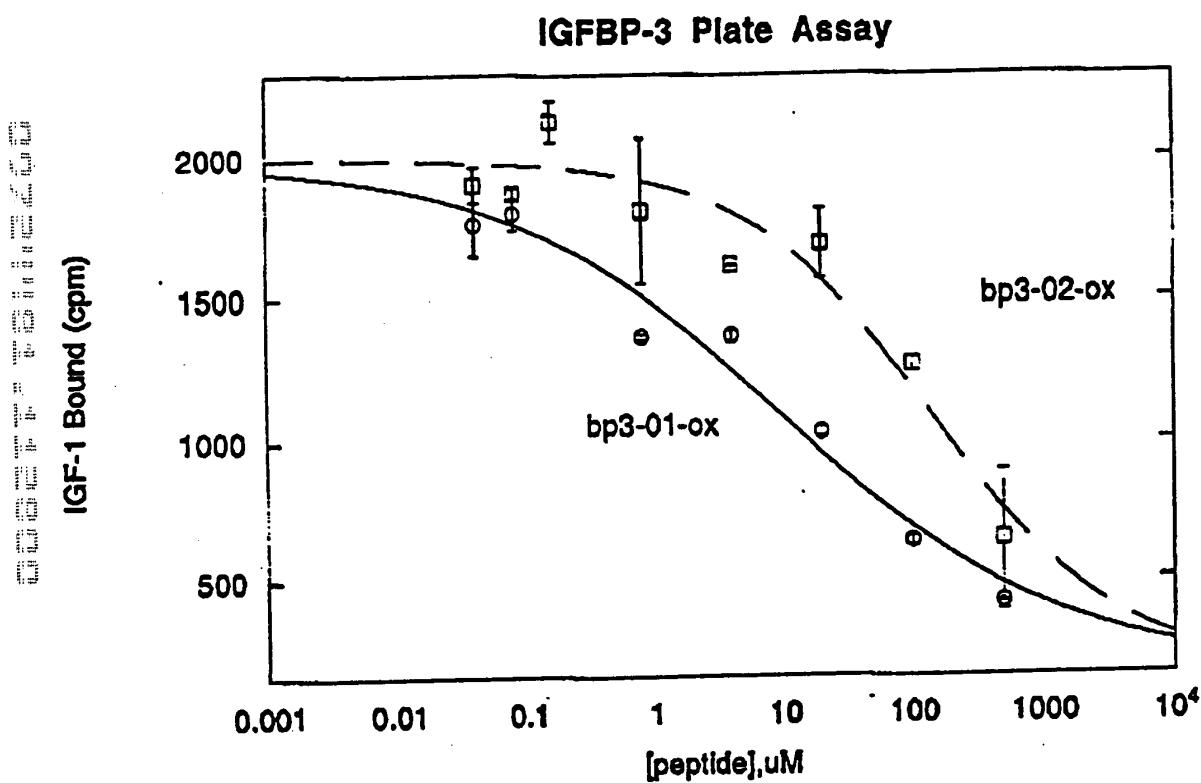


FIG. 36

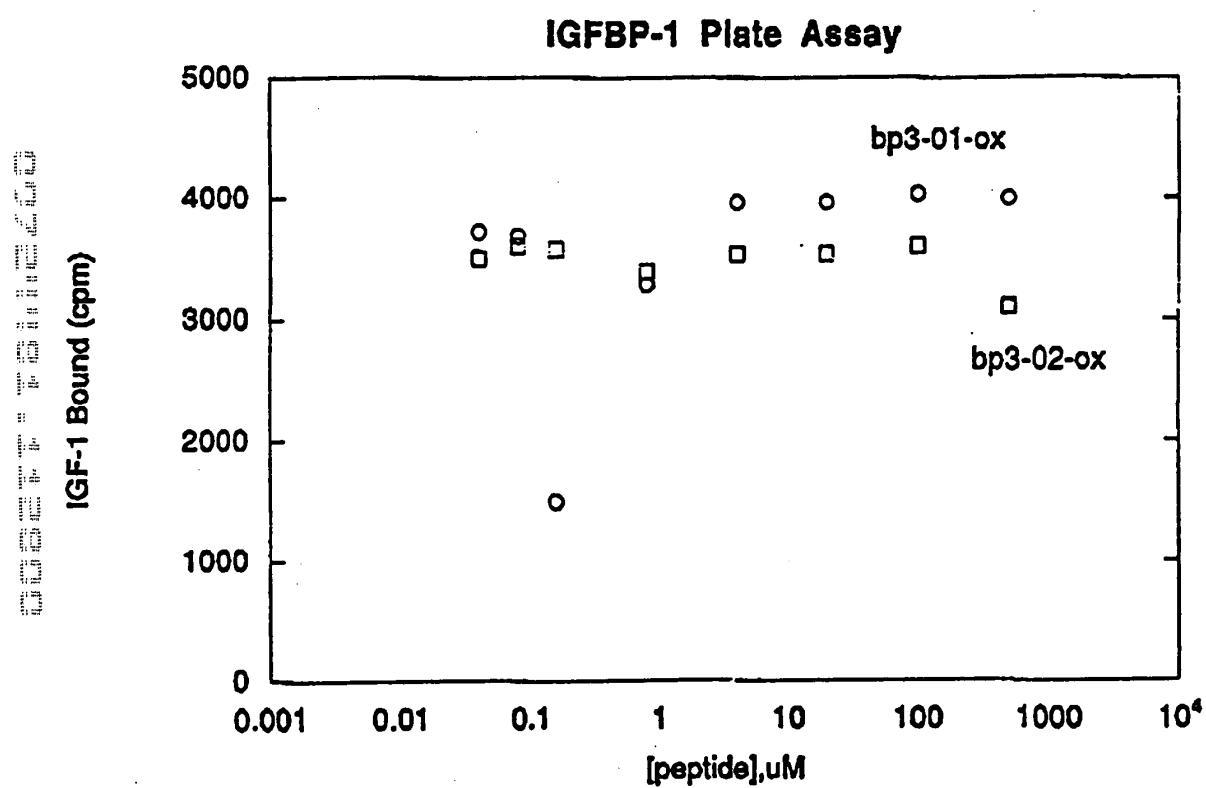


FIG. 37

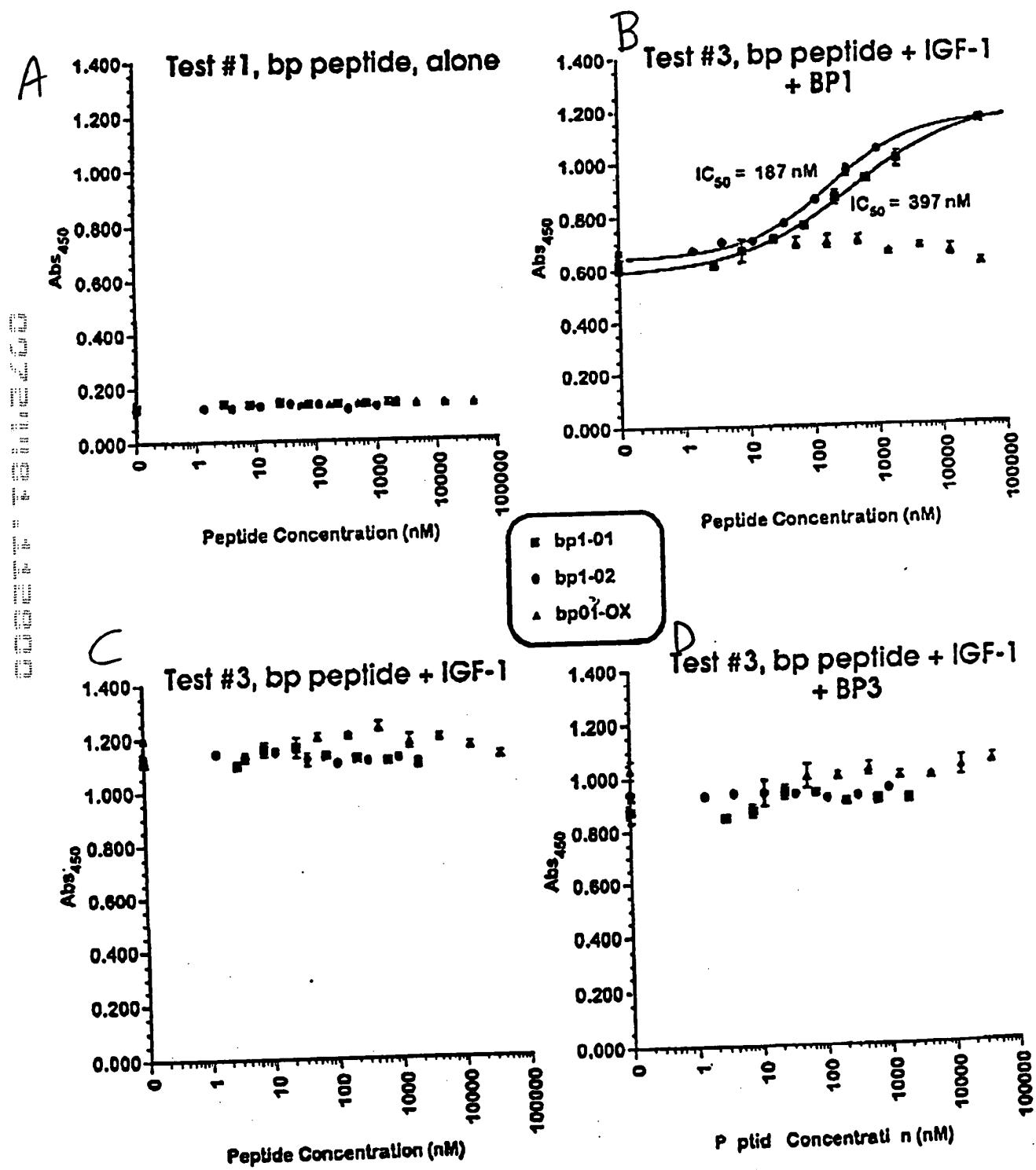


FIG. 38

Competition with 20 nM IGFBP-3
for Binding to Immobilized IGF-2

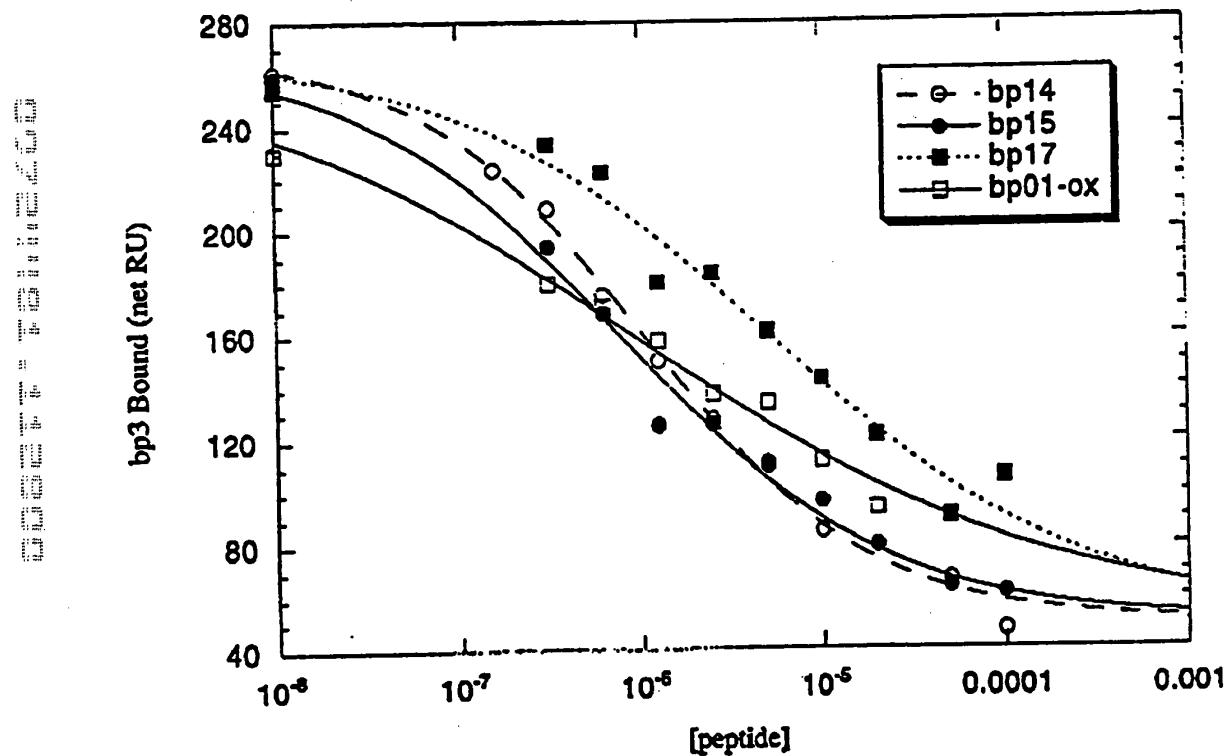


FIG. 39

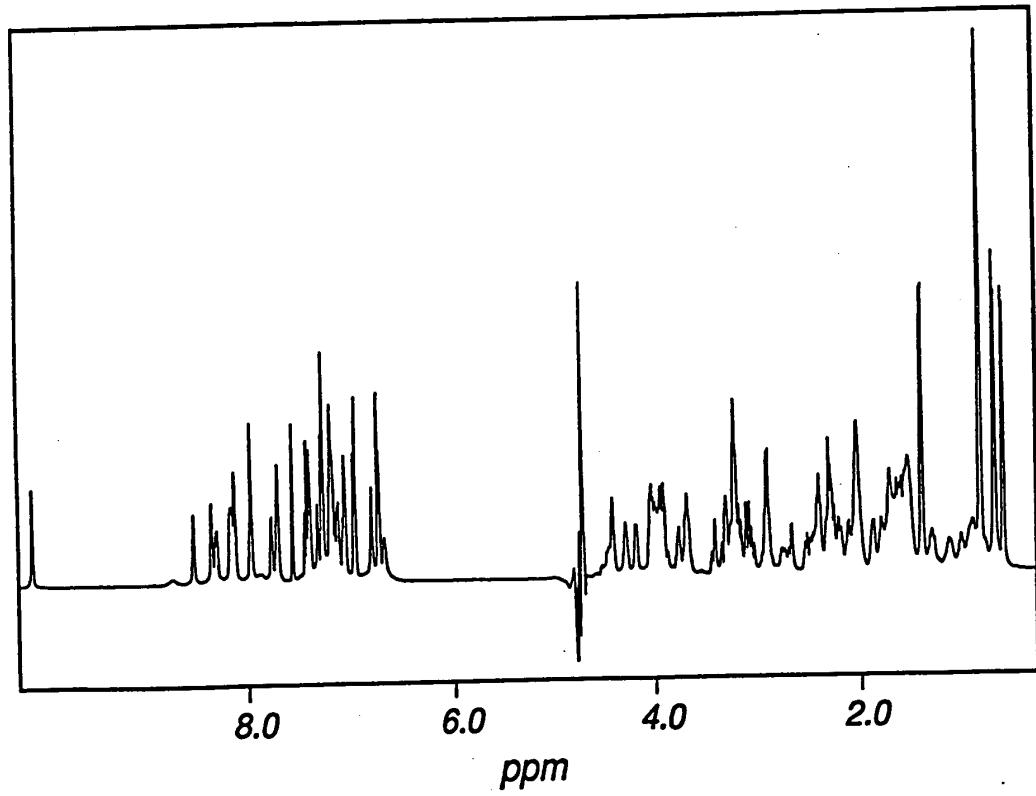


FIG. 40

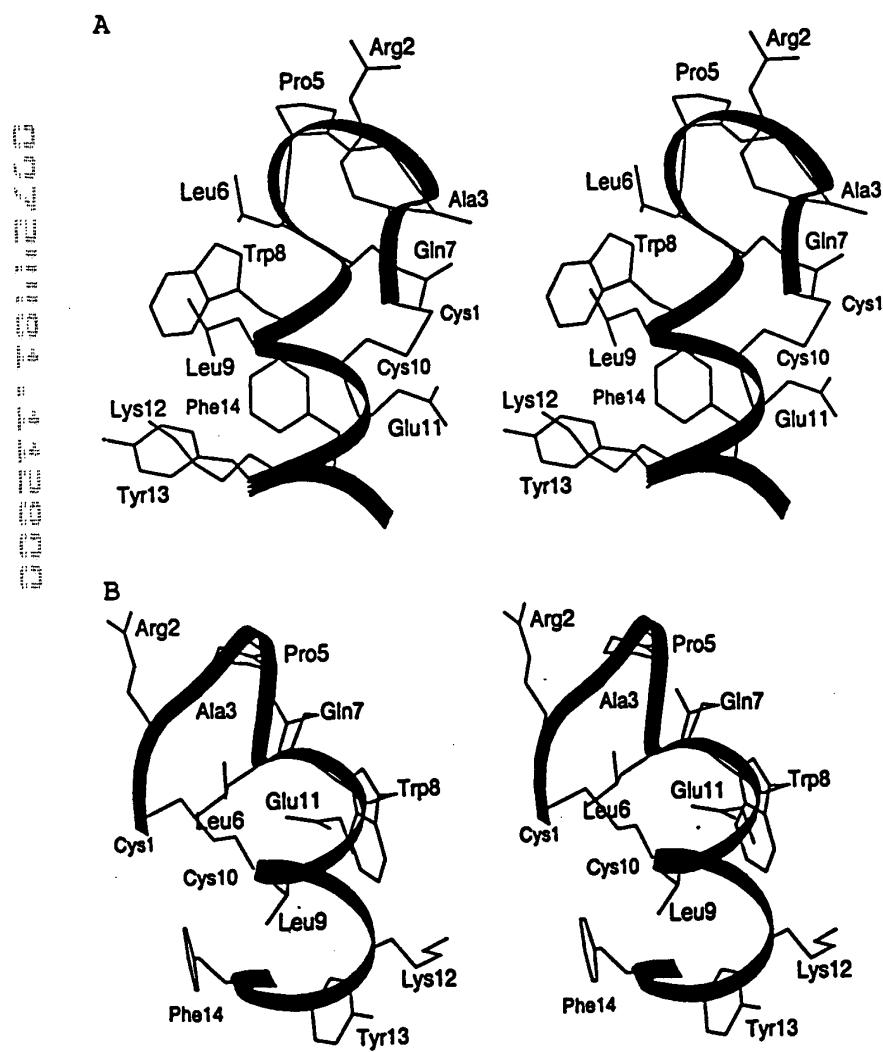


FIG. 41

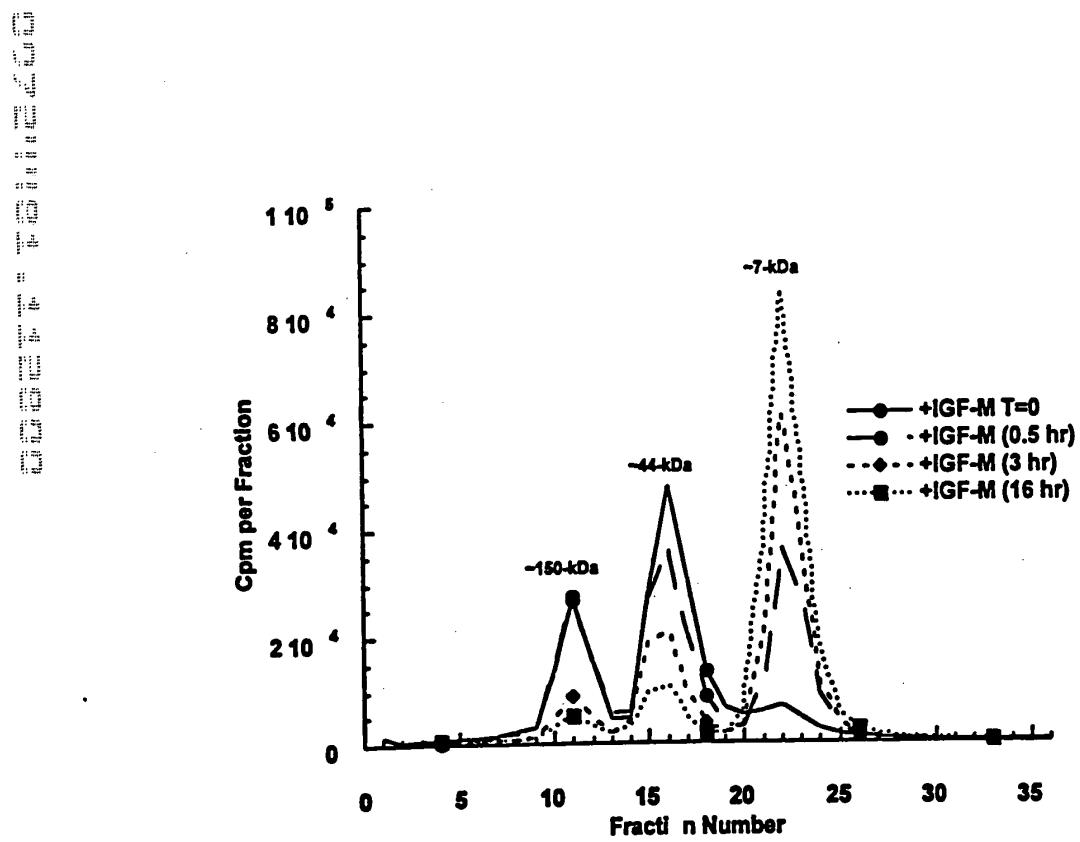


FIG. 42

**Effect of IGF-I Treatment on Total IGF-I
(Mean \pm SE)**

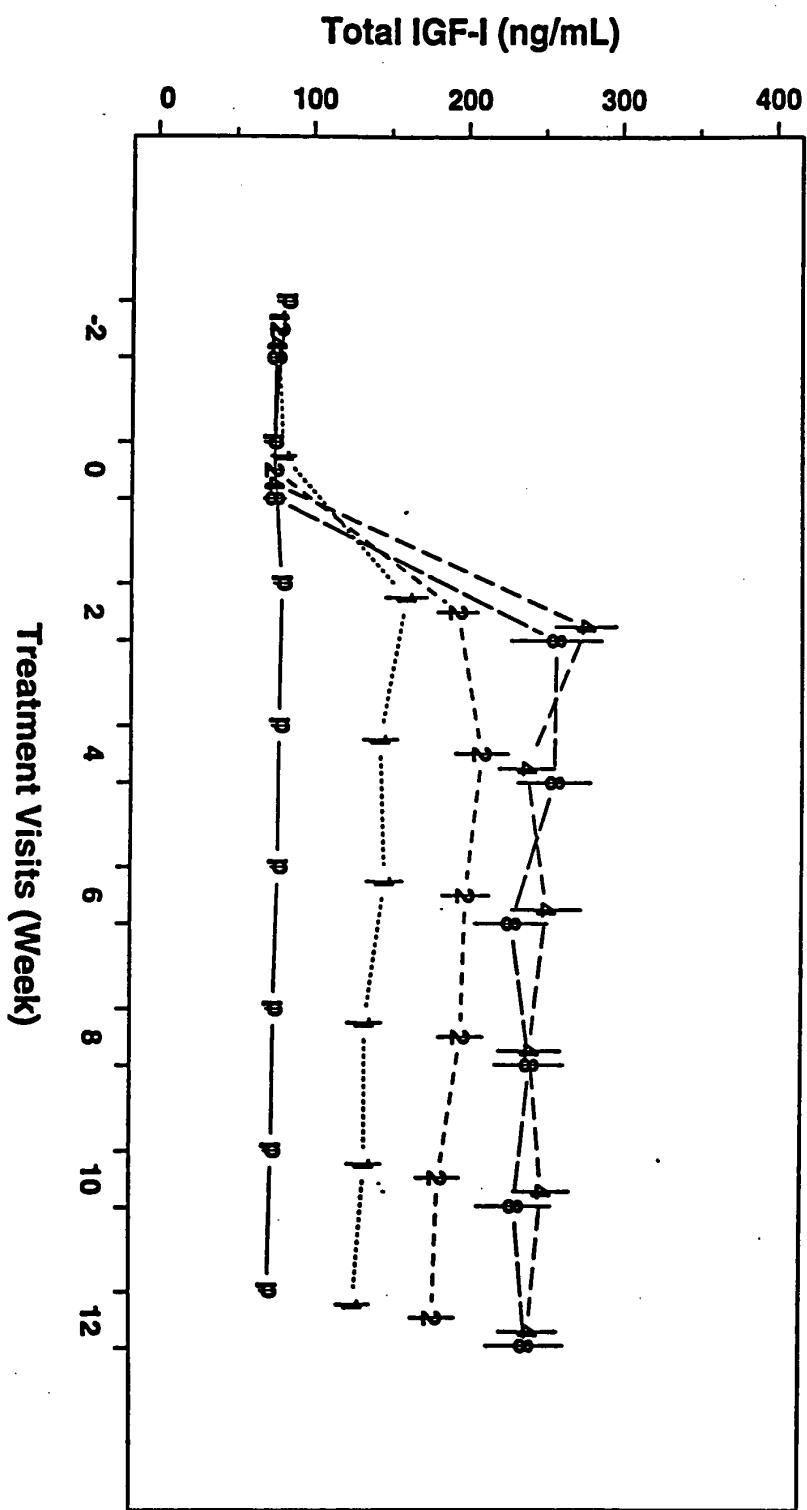


FIG. 43

Effect of IGF-I Treatment on IGF-II
(Mean \pm SE)

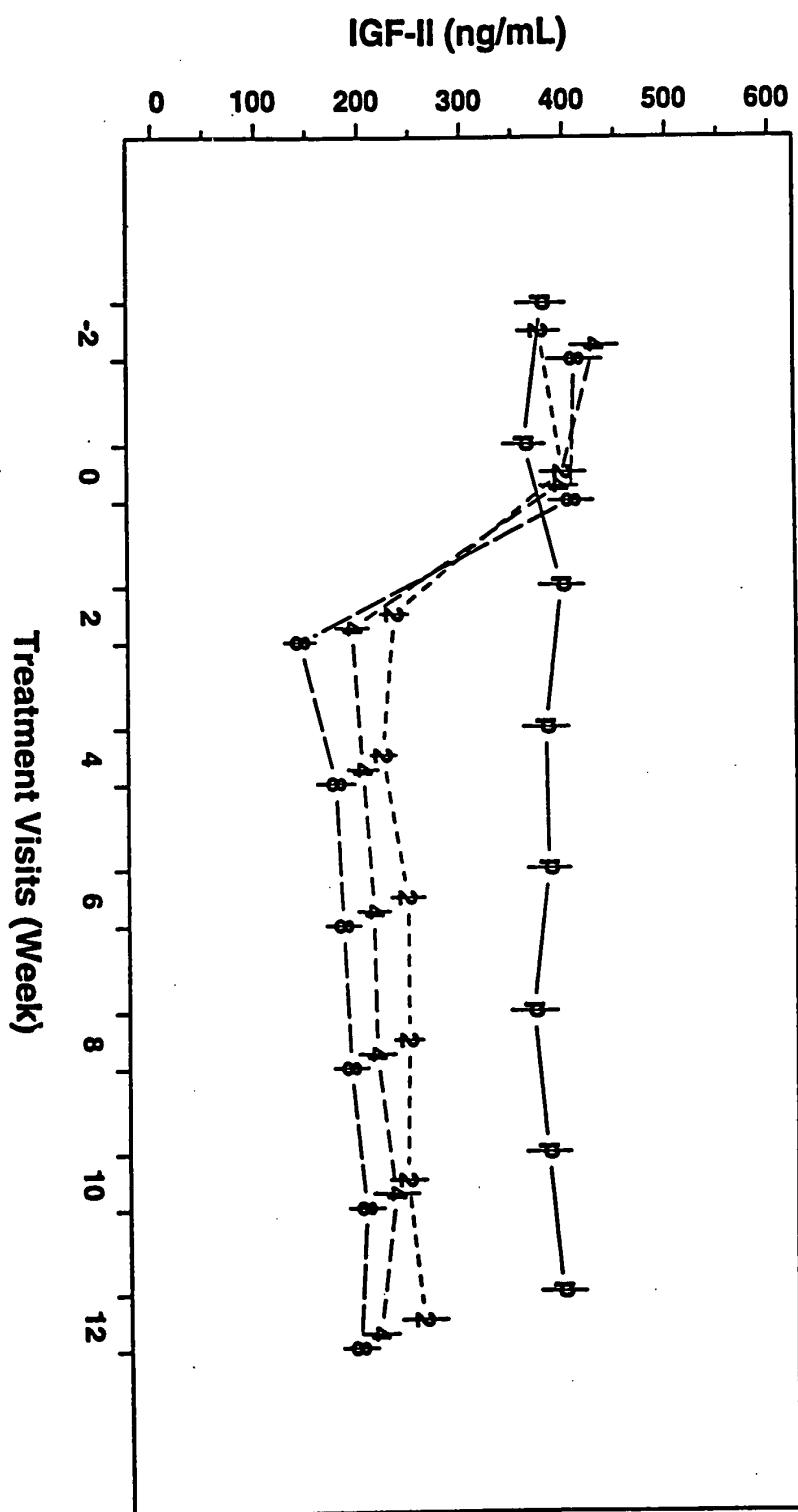


FIG. 44

IGFBP-3 (mcg/mL)

